FARM MANAGEMENT THESES

—

AN ECONOMIC STUDY OF
SHEEP RAISING ON 10 FARMS IN
GENESEE COUNTY NEW YORK

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F. R. WALKLEY

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THE COST OF PRODUCING PEAS
FOR CANNING FACTORY ON
15 FARMS IN OTSEGO COUNTY
NEW YORK

—

L. A. WOOD

—

THE RELATION OF TENANCY
TO SOIL AND THE VALUE OF
LAND IN NEW YORK STATE

—

F. A. ROPER



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AN ECONOMIC STUDY OF SHEEP RAISING ON 10 FARMS IN GENESEE COUNTY, NEW YORK.

Research Problem in Farm Management.

by

F. R. Walkley,

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AN ECONOMIC STUDY OF SHEEP RAISING ON 10 FARMS IN GENESEE COUNTY, NEW YORK.

Purpose

The purpose of this investigation is to learn the methods employed in the raising of sheep on ten farms in Genesee County, where the methods employed are fairly typical of the methods used in Western New York, as a whole, and to make a study of the receipts from them. It is also desired to find the reason why sheep raising is limited to this region in New York State, and what conditions make sheep growing particularly advantageous in this section.

Method of Taking Record

The survey method was used in the taking of these records. Field sheets, similar to those enclosed on pages to , were used. The questions were asked of the farmers and the answers were later checked. If there were any errors or omissions, the farmer was again visited. Many of the questions asked required estimations on the part of the farmer, but, to the best judgment of the writer, all answered questions after careful consideration, and the results obtained from them were very satisfactory, they being very willing to cooperate. The records for the most part are uniform, and no attempt has been made to classify them because of the small number of records.

In selecting the farms to be surveyed, no flocks of less than twenty were taken, and farms having more than sixty were eliminated. The endeavor was to select flocks in which spring lambs were raised and which were composed of sheep of a uniform type. Most of the flocks came up to the standard in this neighborhood.

Description of Region.

The locality in which the records of sheep enterprises were taken is situated in the eastern part of Genesee County, mainly in the township of Le Roy, which is situated twenty-five miles west to southwest of Rochester. With the exception of one farm, as shown on the map of the region, all the farms are within a radius of three miles. The farms are all located within four miles of a shipping station and within five miles of a town with a population of 4,000.

The length of the growing season is 150 days and the average rainfall during the growing season is 15 inches. There is usually one or more drought periods every summer. These are not often severe enough to destroy crops but do result in serious drying up of pasture, and as a result there is often a shortage during July and August.

The land in this locality is for the most part rolling. Parts of some of the farms are too hilly for profitable crop growing and are pastured.

The soil is fertile, being mostly of an Ontario sandy loam or silt loam type. The soils in this locality vary much in a small area. Even parts of the same field may have widely different types of soil. It is of glacial origin and is of a composite kind.

Land values in this region vary from $100 to $125 per acre, depending upon the condition of the farm, layout and other factors. Very little land is changing hands, and land owners are not anxious to sell.

The land is too valuable to use much crop land for pasture. As shown in Table I, less than one-third of the pasture used is land which is available for crops. Less than 9 per cent of the total crop land is used for pasture.

Table I. Use of Land on the Ten Farms.

Acres per farm	148.7
Acres of permanent pasture per farm	23.2
Acres of rotated pasture per farm	9.4
Crop acres per farm	96.6
Acres of other land per farm	19.5

The permanent pasture on these farms consists mainly of woodland, land too wet to crop, creek beds or land which is too steep to be plowed. On most of the farms there was not sufficient permanent pasture, and some good cropland was used

for pasture for the season. Under "other land" is included woodlot which is not pastured, the farmstead, drives, etc. Crop acres per farm do not include the rotated pasture.

The principal crops grown on these farms are timothy and clover hay, wheat, beans, oats, corn and potatoes. A little alfalfa is grown. The average acres of each crop are given in Table II.

Table II. Important Crops Grown.

	Number of farms growing each	Acres
Wheat per farm	10	24.6
Hay per farm	9	21.9
Beans per farm	9	18.5
Oats per farm	8	9.2
Corn per farm	9	7.0
Potatoes per farm	10	4.1
Alfalfa per farm	6	2.6

The usual crop rotations practiced are :

beans - wheat - hay (one or two years)

potatoes and corn - oats - wheat - hay (one year).

Wheat and beans are the most important cash crops. Cabbage were grown on two farms with an average of 1.5 acres per

farm. About five acres of barley were grown on four of the farms. Of the total acreage of potatoes 25 acres were grown on one farm, which was situated in an adjoining township where potatoes are grown extensively.

The locality is mainly a crop growing section, and in most cases only enough livestock is kept to eat up the roughage. Table III shows the number of animals per farm :

Table III. Animals Per Farm.

Animal Units of horses per farm	7.1
Animal Units of cattle per farm	7.0
Animal Units of sheep per farm	5.1

Especially on the farms where sheep are kept, dairying is of minor importance. Although there are seven animal units of cattle per farm, some of these are young stock and feeders. One of the ten farms had 20 head of pure-bred Shorthorn cattle, which were kept for breeding stock and was not a dairy. Pasture, feed and labor all make it unadvisable to have the two enterprises combined. Probably, the competition for pasture is the determining factor. None of the ten farms were fruit farms. However, other farms near this locality, which are fruit farms, kept flocks of sheep which are similar to those on these farms in size of flocks and kind of sheep. Spring lambs were also produced on these farms.

Kind of Sheep Raising.

Although sheep raising seems to fill an important place on each of the farms studied, the receipts from sheep are small when compared with the farm as a whole. The operators when asked why they kept sheep usually replied that they "liked" sheep and so kept a small flock. Undoubtedly, they perform a service for the farmer which causes him to "like" them. The fact that the sheep utilize waste roughage, keep down brush and weeds and furnish work for cheap winter labor makes them popular. The flocks of sheep kept are small, averaging 34.5 mature sheep per farm. Table IV shows the number and kind of sheep on the average farm.

Table IV. Sheep per Farm.

Mature sheep per farm	34.5
Acres of land per mature sheep	4.3
Ewes per farm	30.0
Bucks per farm	1.0
Yearlings per farm	3.5
Pure-breds per farm	3.1

Very few pure-bred sheep are kept. Of the 3.1 pure-bred sheep per farm, one of these, on nine of the farms was a pure-bred Shropshire ram. One man had 18 pure-bred Shropshire

ewes, which was a little over half of his flock. Grade Shropshires are the most popular breed of sheep with these farmers. In 1890, 74.2 per cent of the sheep were fine wools in Genesee County. Now, there are very few fine wool sheep. The writer knows of only one flock of fine wool sheep in the region. Farmers prefer the medium wool breeds in this locality, now, as in them they have a dual-purpose animal. Some stated that they preferred to start with good grade Shropshire ewes and alternate with first a pure-bred Rambouillet buck and then a pure-bred Shropshire buck, thereby developing both mutton and wool production qualities in the offspring.

Pure-breds are not very popular because there is little opportunity to get any more than the market price, and the depreciation is greater, and the pure-breds require more attention. As one farmer put it, "When a dog kills some pure-breds for me, I don't get any more for them than as if they were grades". What these farmers are looking for in their flock of sheep is a type which will require little attention, and in which there is not too much capital tied up.

Spring lambs are usually raised. They are usually all born before the sheep are turned out to pasture in the spring and marketed in the fall before winter sets in. A few hot house lambs are raised. One of the farms, from which a record was taken, was producing hot house lambs which were born in January and February and sold the latter part of April.

Summer Care of the Sheep

During the summer months, the sheep receive but very little attention. After the flock has been turned out to pasture in the spring, about all the attention they get is incidental to looking over the rest of the farm. The crops and sheep are usually looked over at the same time. The regular work on sheep during the summer consists of salting, counting them up and changing them from one pasture to another occasionally. Some make salting a Sunday morning job, and although it takes little time, is time that otherwise would not be productive. Usually during the month of August, the lambs and sheep are brought up to the barns, and the lambs are weaned. When the sheep are to be dipped, this is usually done at the same time. The lambs and sheep are often marked at this time for identification purposes, either with ear labels, paint, or by notching the ears. Two of the farmers did not wean their lambs. About the time the lambs are weaned, the ram is separated from the flock, and then turned in with the ewes in the latter part of October or early November, depending on when it is desired to have the lambs come.

Few farmers take the time or trouble to water the sheep in the summer. One man carried water to his sheep daily. Some kept them in pastures where there was a spring. One man kept his sheep in a pasture without water, but turned them into a field with a water supply once in one or two weeks. Some did not give them water at all during the summer. The general senti-

ment was that the sheep did better with water, but could do without it. Most farmers thought that when they were busy with crops, it was not important enough to water them to take the time to do it.

All the work of the summer on sheep is of minor importance. See chart of labor distribution and Table V for the amount of and proportion of man labor coming in the summer.

Table V. Total Summer Labor on 10 Farms.

Operation	May	June	July	August	September	October
Feeding	33	0	0	0	0	0
Lambing	34	0	0	0	0	0
Salting	6.5	7.5	7.5	7.5	7.5	7.5
Marketing	43	0	0	0	0	8
Miscellaneous	13	15	14	74	15	13
Total	129.5	22.5	21.5	81.5	22.5	28.5

Some flocks were not turned out to pasture until nearly the middle of May, and, consequently, there is some labor for feeding in May. These figures are totals for ten farms. The labor per farm for any month may be easily determined by dividing by ten.

Winter Care of Flock.

From November 1st to December 1st, the sheep are taken from the pastures and put into winter quarters. In many cases the sheep are allowed to go in the barn at night but are allowed the run of a field adjoining the barns. Oftentimes, they run in this field to the first of January, depending on the snowfall, but usually receive some roughage at the barn. The average date on the ten farms of putting the sheep in winter quarters was November 23rd.

The type of building used for sheltering the breeding flock varied on the different farms. On some it was simply a lean-to built of rough unmatched lumber. Most of the sheep were kept underneath the grain barn. The room used by sheep in the winter was space which would, in most cases, have been unused, if the sheep had not had it. The barn was built for the storing of grain, hay, etc., and it is made use of by the sheep, because it is not needed for other things.

Table VI. Total Winter Labor on 10 Farms.

Operation	November	December	January	February	March	April
Feeding	35	151	156	155	156	156
Lambing	0	0	0	25	78	153
Salting	6.5	6.5	5.5	5.5	5.5	6.5
Shearing	0	0	0	0	0	168
Marketing	15	5	0	15	0	5
Miscellaneous	10	1	1	1	1	1
Total	66.5	163.5	162.5	201.5	240.5	489.5

Even in the winter the sheep are given but little attention except at lambing time. Table VI shows the labor on sheep in winter. Practically all of the labor required is to feed the sheep their roughage twice a day and water them. The lambs on most of the farms came in March and April. The amount of labor was considerably greater at this period, ranging from one hour per day more up to five hours.

All through the winter the sheep were allowed to run out in the yard for at least a part of the day. if the weather was not too stormy. In some cases the sheep were fed outdoors.

Table VII. Labor on Sheep.

	Horse	Man
Average number of hours per farm on sheep	18.2	163.7
Average number of hours per mature[1] sheep	0.53	4.74
Average number of hours per sheep[2] of breeding flock	0.59	5.28

Table VII shows the labor on sheep as it was required on the ten farms surveyed. The man labor on the mature sheep was less than one-half of a work unit. The work for raising the lambs is included in this also. The horse work on sheep is of little importance, consisting only of work required in hauling wool and lambs to market.

The labor distribution chart on the following page shows the distribution of man labor per farm by months. Only nine farms were used in computing this average because one farmer was raising winter lambs and had a different labor distribution as a result.

More labor was required in April than in any other month, because most of the lambs come in this month. From December 1st to April 1st the labor on sheep is relatively high, being from 16 to 25 hours a month on the average. One farmer with a flock

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[1]Mature sheep includes ewes, rams and last spring's lambs to be added to the flock.

[2]Sheep of the breeding flock includes ewes and rams, only.

Hours

Labor Distribution.

54
51
48
45
42
39
36
33
30
27
24
21
18
15
12
9
6
3
0

Jan.
Feb.
Mar.
Apr.
May.
June.
Jul.
Aug.
Sept.
Oct.
Nov.
Dec.

of thirty ewes put in an hour a day caring for the flock during the winter months. During the summer months the labor was very low on sheep. One man with a flock of good grades and purebreds put in about nine hours per month. Most of this time consisted of carrying water to the flock. During the month of August, when the lambs are weaned, there was an increase in the amount of labor, but not enough to be of much significance. The labor distribution on sheep is such as to fit in very well with these general crop farms. Most of the labor on sheep comes in the winter months, when there is the minimum amount of work on a general crop farm. The only serious conflict in labor is when the lambs come late in April and conflict with field work.

Feeding.

Grain

Very little grain is fed to the ewes on these farms. On two of the farms no grain was fed to the ewes. Only two of the farmers grained their flocks throughout the winter, and this was a very light feed, consisting of about one pint to one quart per day. Six of the men began graining the sheep about two weeks before lambing and continued until the sheep were turned out to pasture. The two farmers who grained their sheep throughout the winter increased the grain a little before lambing time. The grains most used were corn, oats and bran. Cull beans, as they came back from the produce dealer's screen, were fed to the

sheep. They were of no value to any other stock and would have been thrown away, if there had not been a flock of sheep to consume them. No value was placed upon these, and the exact amount was not determined, but they were an important feed, making up about one-fourth as much more grain as is tabulated in Table VIII.

Table VIII. Grain Fed to Sheep.

Pounds of grain fed to sheep per farm	1229#
Amount of grain fed to mature sheep per farm	884
Amount of grain fed to fattened lambs (offspring of flock) per farm	345
Amount of grain fed to mature sheep per sheep	25.6
Pounds of salt used per farm	322.5
Pounds of salt used per mature sheep	9.35

From Table IX we find that oats are the most important feed for the breeding flock, with corn also important. For fattening the lambs corn is fed almost exclusively, although on the three farms that lambs were grained either oats or bran were fed with it in small quantities. Feed fed to fattening lambs is in all cases only to lambs produced by the flocks on these farms.

Table IX. Grains Fed Per Farm.

	Corn	Oats	Bran
To mature sheep	308.8#	495.2#	80.0#
To fattening lambs	274.2	20.8	50.0
Total	583.0	516.0	130.0

Roughage

Table X gives the roughage fed on the farms to sheep.

Table X. Roughage Fed to Sheep.

	Pounds per farm	Pounds to mature sheep	Pounds to fattening lambs	Pounds to mature sheep per sheep
Bean pods	16,100#	14,812#	1,288#	429.3#
Hay	10,700	9,844	856	285.3
Straw	5,600	5,152	448	149.3
Total	32,400	29,808	2,592	863.9

Bean pods are the most important roughage fed to the sheep. Practically all the bean pods produced are fed to sheep. When the operators were asked why they fed their bean pods to sheep, they said that sheep liked them a little better than other stock. Most of them thought that cattle did about as well on them as did sheep, when fed not more than once a day.

The hay fed to sheep was mainly clover. The farmers

seemed to prefer bean pods to the hay and would remark that they would feed clover hay or alfalfa if they did not have the bean pods to feed. Very little alfalfa was produced, as Table XI indicates :

Table XI. Acres of Roughage Grown Per Mature Sheep.

Acres of beans per mature sheep	0.54 A.
Acres of alfalfa per mature sheep	0.08
Acres of hay (timothy and clover) per mature sheep	0.63

The straw used for sheep was practically all used for feed. The method generally followed was to feed straw once a day - usually in the morning - and then throw out what was left for bedding after the sheep had picked it over. The refuse from bean pods fed was also used for bedding, and in one case was the source of all the bedding used.

Succulents.

On only two farms, were succulents fed to the sheep. On one farm about 2 tons of cabbage were fed to a flock of 20 ewes. These were fed out because of the very low price. On another farm 60 bushels of beets were fed to 35 sheep. No grain was fed to sheep on this farm. This farmer makes a practice of growing from 50 to 60 bushels of beets every year for his sheep and believes them to be very good sheep feed.

Practically all the feed fed on these farms is home-grown. The total value of all grain purchased was $23.15, or $2.32 per farm. This feed consisted of 550 pounds of bran and 27 bushels of oats. All roughage used was home-grown.

Pasture

Table XII. Acres of Pasture Per Sheep.

Acres of pasture for sheep per farm	12.1 A.
Acres of pasture for sheep per mature sheep	0.35
Acres of pasture for sheep per sheep unit	0.25
Acres of pasture per animal unit of sheep	1.78

In order to obtain from the total number of sheep and lambs pastured, a figure which would represent their equivalent in mature sheep pastured, the "sheep unit here used" was obtained by taking from the average of the inventories one-half of the number of yearlings inventoried at the end of the year. To the remainder was added one-half of the lambs produced. The yearlings inventoried at the end of the year were deducted in order to prevent duplication, as they are included with the lambs produced.

The acres of pasture for sheep were estimated from the description of the land pastured furnished by the operator as shown in the sample record. (Page) In addition to this

pasture indicated here, the sheep received considerable pasturage from the use of land after crops. Sooner or later the sheep were turned in after most of the crops and allowed to browse out the fence corners and such weeds and refuse from the crop as they could find. Of the pasture included in the table much was woodland pasture. One man pastured his sheep continually in a 10-acre woodlot for the purpose of keeping the brush cleared out. Another of the ten farmers recently finished clearing a piece of cut-over woodland by pasturing it with sheep, which kept the brush browsed off. The soil being rather light and the rainfall for the growing season medium, 1.78 acres of pasture per animal unit is insufficient to keep an animal unit alone and indicates that a considerable portion of the pasture was obtained from land where crops had been removed.

Diseases and Dogs.

Although much is heard about the dog driving the sheep from New York State, the figures obtained on these farms do not prove the dog to be such a great menace to sheep raising, as he is often pictured. Figures were obtained from the farmers, covering a period of ten years, which show the number of sheep and lambs killed by dogs and the loss to the operator, above the indemnity received.

Table XIII. Losses Caused by Dogs and Deaths.

Average natural death rate per farm	1.0
Ewes killed per farm for 10-year period	2.6
Lambs killed per farm for 10-year period	2.4
Average number of times dogs have been in each flock	1.4
Average loss per farm from dogs in 10 years above indemnity	$38.40
Average loss per farm per year from dogs in 10 years above indemnity	$3.84

The loss from demoralization to the flock is the greatest loss suffered. The dog tax fund covers to a large extent the loss from sheep killed. The amount received for each sheep killed was in all cases within one or two dollars of the actual value of the sheep. When dogs got into the flock and chased them so severely as to catch and kill several old ewes, especially in the late summer, the flock was nearly ruined. In the following year lamb production was very low. Many of the lambs born were weak and soon died. The sheep, themselves, did very poorly. They were nervous and would run at the slightest alarm. They became thin and fell off in wool production materially. One farm has had severe loss from dogs in both 1915 and 1916. In the summer of 1915 the dogs got into the flock, killing 4 ewes and 5 lambs. In the spring of 1916 only 23 lambs were produced by a flock of 30 old ewes and 9 yearlings. The wool production in 1916 was only 6.2 pounds

per sheep. This is an example of the damage done by dogs, when they chase the sheep severely. The owner estimated the loss from demoralization of his flock at $100 as a result of the dogs work in 1915.

Fortunately, however, this more severe type of dog work does not occur very often. On the ten farms, in the ten-year period, only four times did the dogs do anywhere near as much damage as this. In other cases the dogs killed one or two sheep or a few lambs, without chasing the sheep much and, consequently, the flock was hurt but little. The farmers consider the dog problem a serious one -- more so than it probably deserves. The loss per year from dogs is $3.84 which is less than the loss of sheep from other sources during the year. Table XIV gives in itemized form the losses from dogs.

Table XIV. Ten-year Losses on Farms from Dogs.

Farm no.	Number times dogs been in flock	Sheep killed		Lambs killed		Total indemnity	Loss from sheep and lambs killed	Loss by demoralization of flock
		No.	Total value	No.	Total value			
1	2	0	0	5	$20	$9	$11	0
2	0	---	---	---	---	---	---	---
3	1	2 injured		---	---	---	---	$30
4	1	---	---	1	6	5	1	0
5	5	17	$128	16	112	178	62	125
6	1	Dog driven out before any damage done (3 sheep injured)					---	---
7	2	7	60	---	---	42	18	100
8	0	---	---	---	---	---	---	---
9	1	---	---	2	8	6	2	---
10	1	2	24	---	---	24	0	35
Total	14	26	$212	24	$146	$264	$94	$290

On most farms there appears to be very little trouble with disease. One or two of the farms surveyed had a loss of one or two sheep from disease. One farmer situated in this locality went out of the sheep business the past summer because of severe loss of lambs due to stomach worms. His sheep had been pastured on the same land continuously for many years. On the farms surveyed some of the farmers had kept sheep in the same pasture for a considerable number of years but have experienced no trouble.

Marketing.

Most of the lambs on these farms were sold in the fall, before the sheep were taken from the field. They were sold alive to a butcher who does an extensive business in the surrounding region to furnish trade in Rochester. Some sell to local shippers who ship to Buffalo. Farmers who feed lambs during the winter in addition to their own usually ship their lambs directly to the Buffalo market. All but three of the farmers sold their lambs in the fall this past season. Two of these sold in February after feeding for two months on a grain ration. The other was raising hot-house lambs which he sold the latter part of April to a butcher who put them on the Rochester market. The price received for hot-house lambs was $6.50 per head in April, 1916. The usual price had been from $4 to $5.

The sheep production as shown in Table XV indicates that the production per sheep here is considerable better than for the whole of New York State.

Table XV. Production.

Total number of lambs per farm	28.3
Lambs per ewe	0.95
Total number of fleeces per farm	35.6
Pounds of wool per farm	275.2#
Average wool production per sheep sheared	7.7#
Sheep manure applied to land per farm	18.1 tons
Sheep manure applied to land per mature sheep	0.51 tons

Lambs which were killed by dogs were included in the total number of lambs; but those which died while young were not included.

Costs.

In Table XVI is given all the costs for the sheep on the farms surveyed. The average figures are given in each case.

Table XVI. Sheep Costs.

Item	Per farm	Per mature sheep	Per unit of breeding flock
Man labor	$32.74	$0.95	$1.06
Horse labor	2.73	0.08	0.09
Pasture	53.65	1.55	1.73
Grain	18.65	0.54	0.60
Roughage	131.00	3.80	4.23
Succulents[1]	2.13	0.062	0.07
Sheep shearing	2.96	0.086	0.10
Use of buildings	15.25	0.44	0.49
Salt	0.97	0.028	0.03
Insurance	1.80	0.052	0.06
Use of special equipment	0.91	0.026	0.03
Decrease inventory and purchases	27.65	0.80	0.89
Cost of twine	0.53	0.015	0.02
Miscellaneous	0.66	0.019	0.02
Total	$291.63	$8.45	$9.40

The sheep shearing was hired done on eight farms. The value of the special equipment was $9.10 per farm.

Nearly half of the total cost on these farms was for roughage. There were very few cash expenses in connection with

[1]Fed on two farms, only -- cabbage and beets.

the sheep. An arbitrary figure was used in charging labor. Twenty cents per hour was charged for man labor and 15 cents per hour for horse labor. The owner put in the equivalent of a man's time assisting in the shearing, as tieing wool, turning the crank on the clipping machine, etc. In charging the use of buildings, the farmers estimated the value of the building and the share used by sheep, and a 10 per cent charge was made upon the value of the share used by sheep. Salt was obtained at low cost (30 cents per hundredweight) directly from a salt plant. Special equipment included racks, troughs, feed pails, clipping machines, wool boxes, etc. Ten per cent of the value of these was charged to the sheep.

Although twine used for tieing up wool is one of the minor expenses, it may be of interest to note the amount of wool that one pound of wool twine will tie up. The average of the figures on the ten farms were taken in table XVII.

Table XVII. Wool Twine.

Pounds of twine used per farm	4.5#
Average cost per pound of wool twine	11.6¢
Pounds of wool tied per pound of twine	61.4#
Number of fleeces per pound of twine	7.8

Returns and Profits.

Tables XVIII and XIX show the returns and the profits from the sheep.

Table XVIII. Returns from Sheep.

	Per farm	Per mature sheep	Per unit of breeding flock
Receipts from increase inventory and sale of mutton[1]	$240.98	$6.98	$7.77
Receipts from sale of wool	91.04	2.64	2.94
Value of sheep manure applied to the land	27.23	0.79	0.88
Total	$359.25	$10.41	$11.59
Receipts per sheep sheared from sale of wool			$2.56
Receipts per lamb for lambs sold			$8.18
Number of lambs sold per farm			25.3

Sheep manure was credited on all the farms at $1.50 per ton at the barns.

[1] Includes indemnity for sheep killed by dogs.

Table XIX. Profits from Sheep.

Receipts per farm	$359.25
Costs per farm	291.63
Interest on average of two inventories	18.70
Profits per farm	48.92
Profit per man hour	0.30
Profit per mature sheep	1.42
Profit per unit of breeding flock	1.58
Profit per animal unit of mature sheep	9.94

The profits obtained per farm are very good, considering the size of the enterprise, etc. When looked at from the point of view of profits per man hour the receipts appear to be exceptional. Probably more money is made from sheep in proportion to the labor than of any other enterprise on these farms. Since these profits give a very favorable aspect to the business, the question is, are these prices and this year's production typical of other years.

As to production, it is typical. These farmers have received about the same number of lambs per ewe and about the same wool production in past years. Two of the men stated that their wool production was a little lower than usual this year.

Prices are not typical of former years, as shown in Table XX.

Table XX. Comparative Prices.

Average price received for lambs per hundredweight in 1916	$10.34
Average price received for wool per pound in 1916	33.06¢
10-year average price for lambs per hundredweight	$7.82
10-year average price for wool per pound	24.1¢

Wool prices are 37.2 per cent higher than the ten-year average and lamb prices are 32.2 per cent higher. The ten-year average prices were obtained from the Farm Accounts of some of the farmers visited and were actual prices received in the nine preceding years, averaged with the year, 1916.

It would not be just, however, to deduct 37 per cent of the wool receipts and 32 per cent of lamb receipts from the total receipts, and from the remainder subtract the costs and interest per farm, to obtain the profits per farm because some of the farm expenses are higher than the average for ten years.

Table XXI shows the relative cost for sheep of the more important items for the 10-year period as compared with 1916.

Table XXI. Relative Costs.

	Per cent of total costs on sheep	Per cent above 10-year average in 1916
Roughage	45%	-2%
Grain	6	35
Pasture	18	---
Man labor	11	20
Decrease inventory and purchases	9	---

Hay in the past ten years was a little higher on the average than in 1916. No figures were obtainable for bean pods, but it is reasonably certain that prices have not changed much. Cost accounts kept on New York State farms by the Department of Farm Management of the New York State College of Agriculture show little variation in different years for the price of bean pods. The increase of 35 per cent in grain prices in 1916 above the 10-year average was figured on a basis of corn and oat prices for New York State, obtained from the Monthly Crop Report. Oats were 26.5 per cent above the 10-year average and corn 46.2 per cent. Grain, however, is a minor expense and would have little influence. Pasture, which is an important expense, has undoubtedly increased in cost because of the increased land values for the last decade. The cost of fencing has increased, and the supply of pasture land has diminished in this region. All these factors make pasture more expensive. Labor has in-

creased considerably in cost.

The decrease in inventory and purchase cost has increased over the 10-year average because of the increased value of the sheep. For the same reason interest is higher.

Although the expenses on sheep have increased somewhat, they have not increased as much as have the prices for lambs and wool, and, consequently, the profits on the sheep for 1916 are considerable above the average profits that were received for the past years.

Sheep Distribution.

In connection with the study of the 10 sheep enterprises in Genesee County, it might be well to note the general trend of the sheep industry in New York State and in the United States.

According to the United States Census report in 1910, New York State ranked twentieth in number of sheep. In 1880 New York State ranked sixth in number of sheep. The Western Mountainous States have been rapidly increasing in number of sheep. The trend of the sheep industry has been westward and is still going on. The states of Montana, Wyoming, New Mexico, Utah, Idaho and other mountainous western states have rapidly increased in numbers of sheep. On the other hand, the Eastern and Southern states have rapidly decreased.

In New York State, the counties with the largest number of sheep as shown on the map are Orleans, Ontario, Yates, Livingston, Schuyler and Genesee. In 1860 the counties with

the most sheep in New York were Livingston, Ontario, Monroe, Steuben, Washington, Genesee, Orleans and Wyoming. Practically the same counties lead in the sheep industry now as did fifty years ago. The sheep industry has decreased rapidly in all of the counties in the State, but in the counties of Western New York mentioned above have decreased less rapidly than in other parts of the State. There has been little decrease in the number in the last ten years in these counties.

The fact that the sheep industry is moving out of most localities in New York State is highly significant. Range conditions in the Western Mountainous States, the abundant supply of pasture land, the ease with which sheep and their products may be shipped long distances to market, all tend to move the sheep industry westward. Sheep still are kept in small flocks on a considerable number of farms in Western New York, not because of the profits from sheep, but because of other factors, mainly. The labor distribution on sheep is such that it fits in well with the labor distribution on the crops grown in this section. Sheep furnish a means of utilizing roughage and returning it to the land in the form of manure, which is important in this region. The flocks of sheep on the farms of this locality may be considered a "benefactor" in that they keep down weeds, kill brush by trimming off the leaves and keep the fence corners cleaned out. In many localities the dairy cow has forced out the sheep, and in time when the demand for milk becomes great enough in nearby cities, dairying will undoubtedly supplant sheep growing in this locality. The maps

in the back show the distribution of sheep in New York State and in the United States now, and the general movement of the sheep industry in the United States since 1860.

Summary

The sheep enterprises on the farms surveyed were typical of the size of flocks, kind of sheep kept, and general methods used in Western New York.

Shropshire grade sheep were the most popular breed and on eight of the farms a pure-bred Shropshire ram was kept.

The average profit per farm from sheep was $48.92. The profit per man hour of labor was $0.30.

In 1916 the price for lambs was 32 per cent and for wool 37 per cent above the ten-year average.

Some expenses were somewhat higher in 1916 than for the ten-year average, but were not as high, relatively, as wool and lambs.

Little grain is fed to sheep, only 6 per cent of the total cost being for grain.

Roughage fed to sheep was 45 per cent of the total cost.

Sheep fit into the labor distribution of this locality very well, where wheat, beans, hay, oats, corn and potatoes are the principal crops.

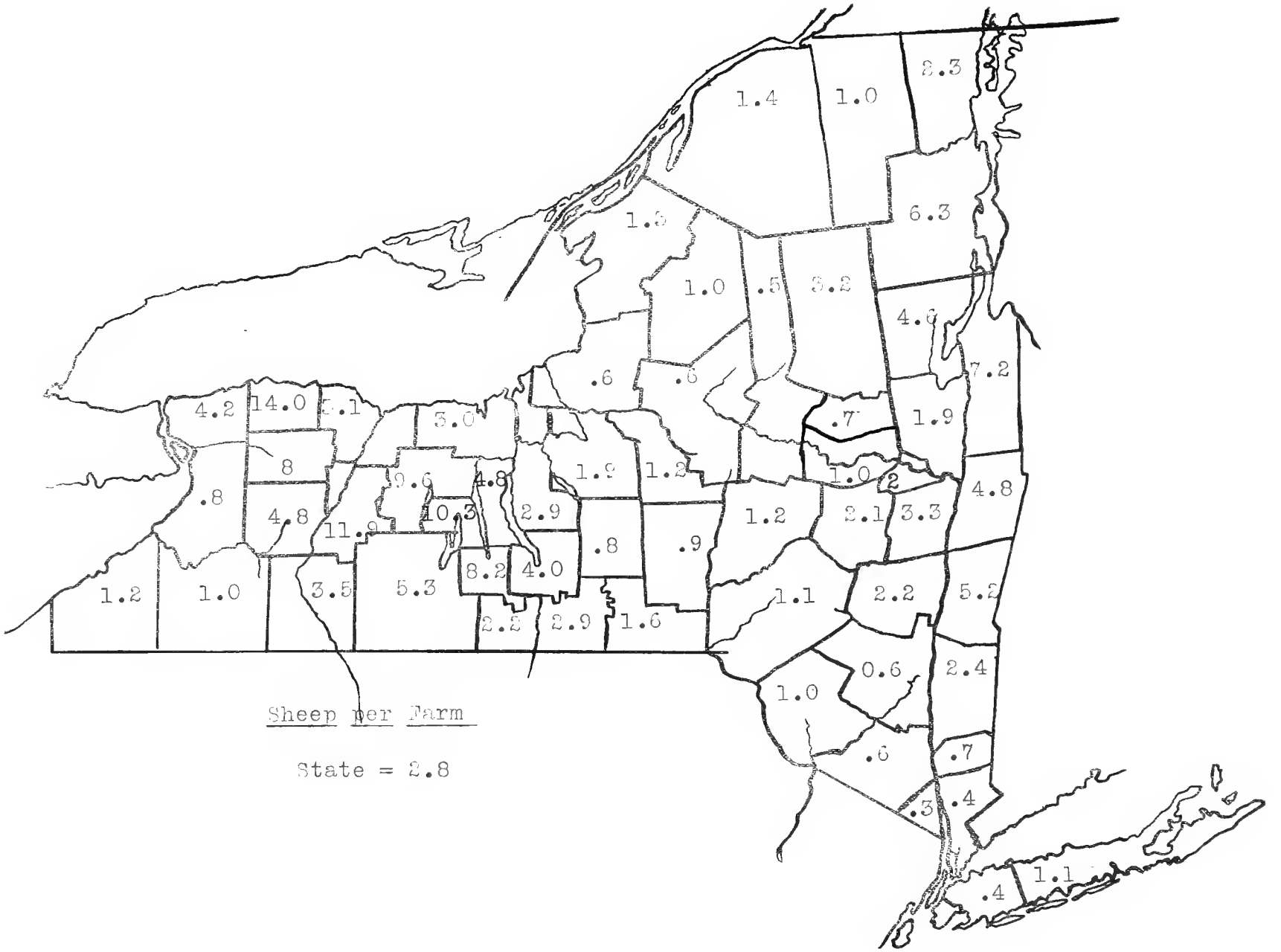
The sheep consume considerable waste feed, which other stock would not eat.

The average lamb production per ewe was .95 and the

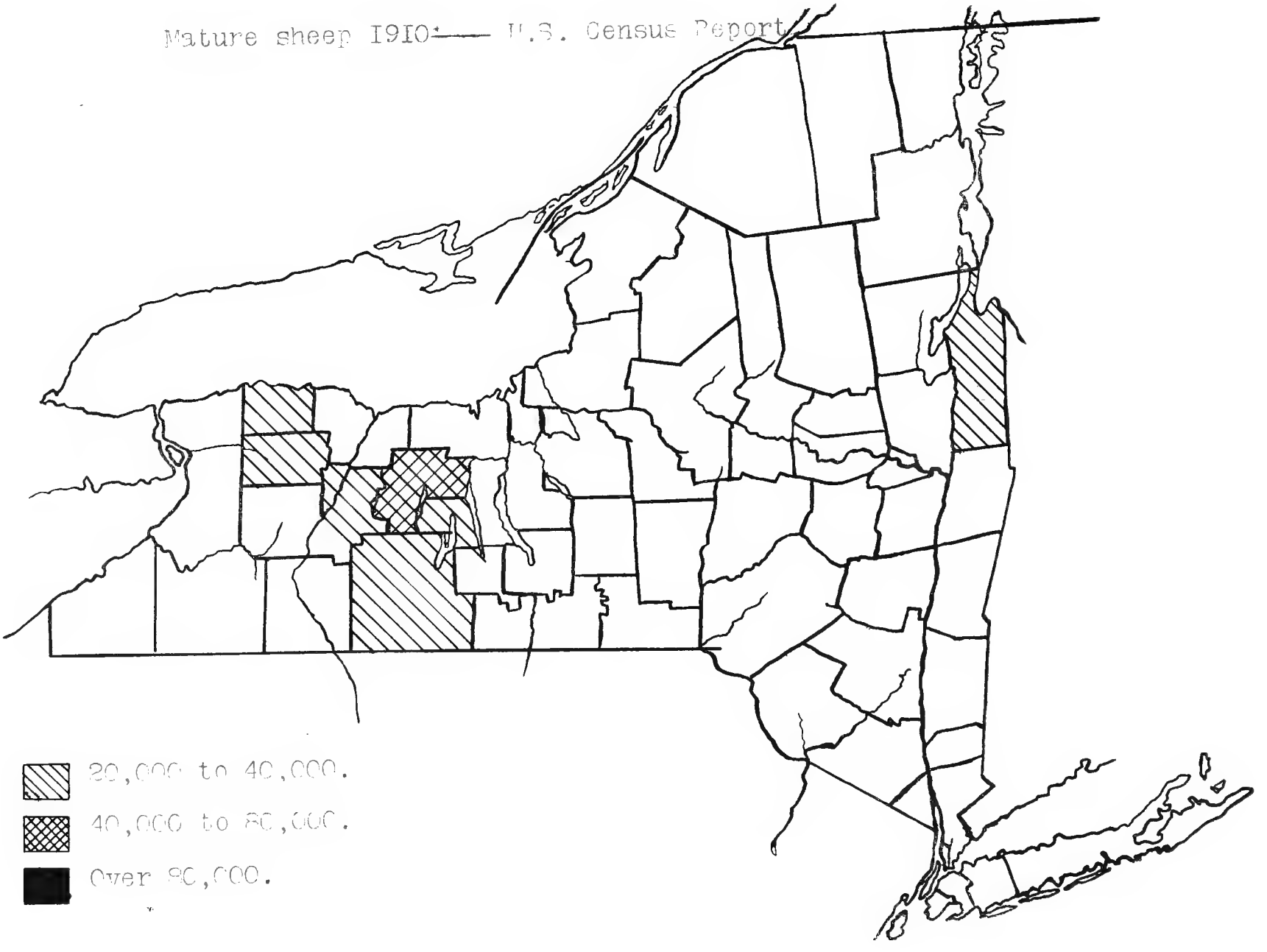
wool production per sheep sheared was 7.7 pounds.

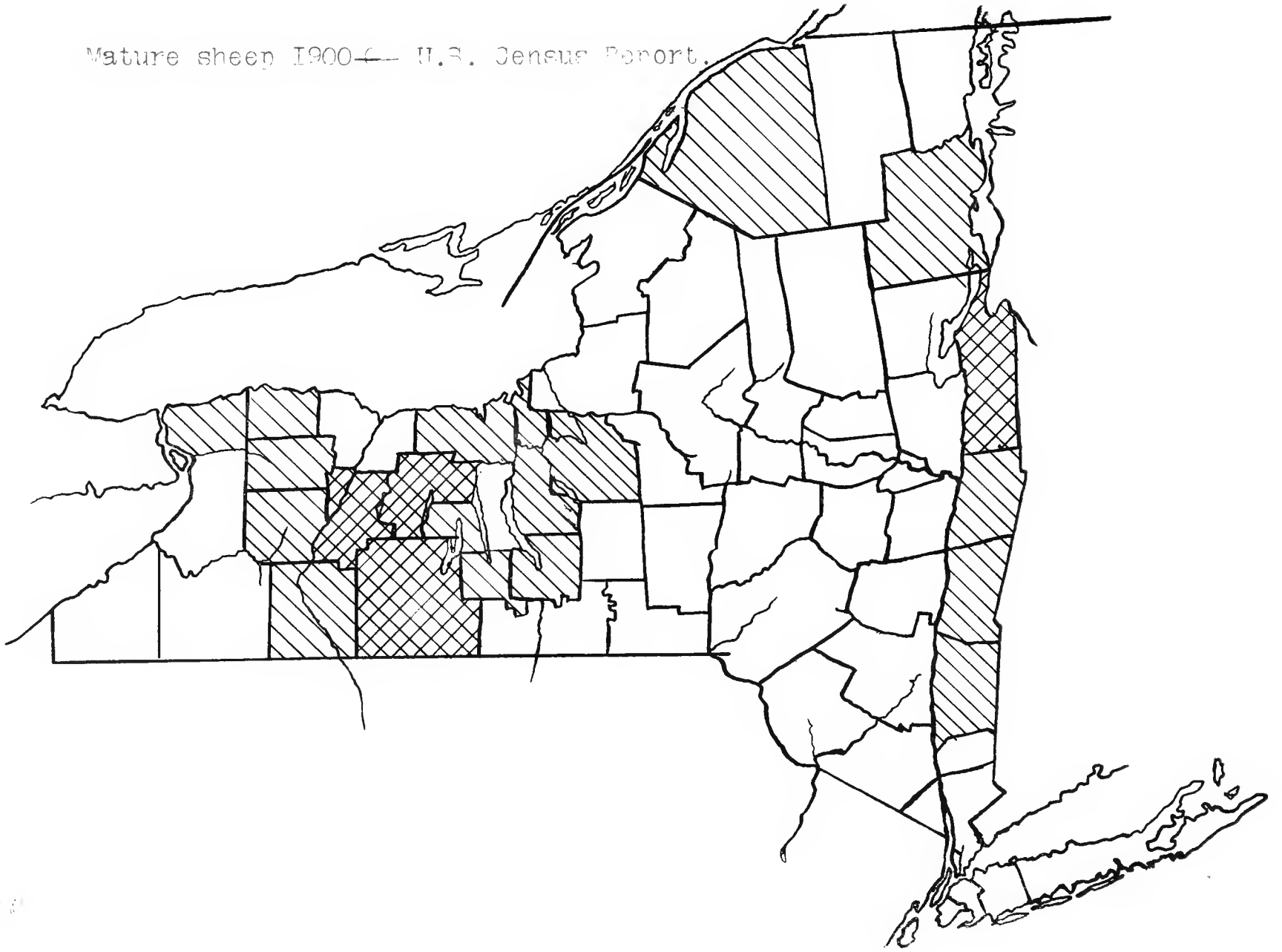
The average price received for lambs in 1916 was $10.34 per hundredweight, and the average price received for wool in 1916 was 33.06 cents per pound.

There still seems to be a place for a small flock of sheep on many Western New York farms, but increasing demands for dairy products may in time force out the sheep business, if it is not already doing so.

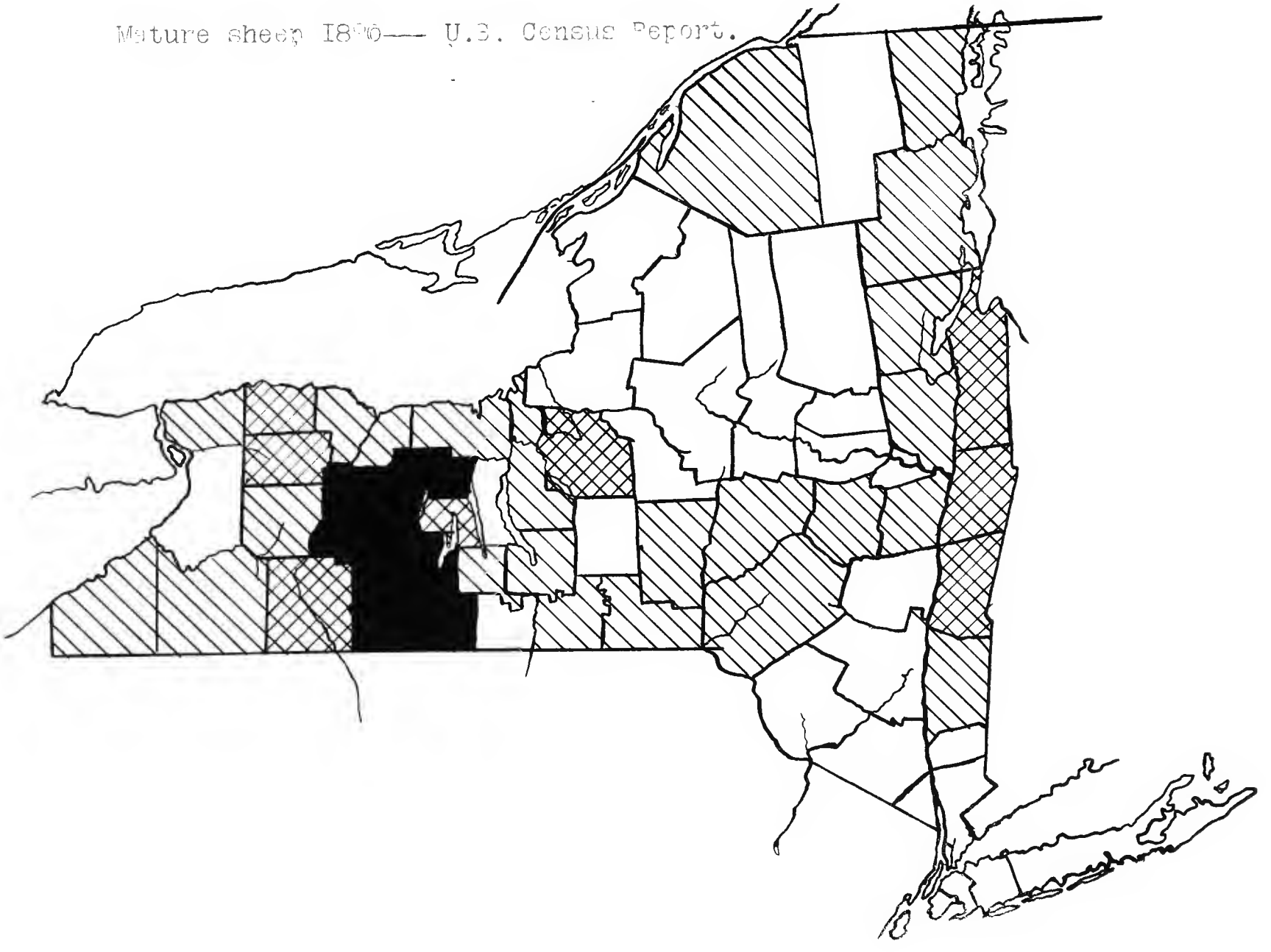

1.4
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3.3
1.5
6.3
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7.2
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3.1
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8
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11.9
10.3
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1.1
Sheep per Farm
State = 2.8

Mature sheep 1910—— U.S. Census Report

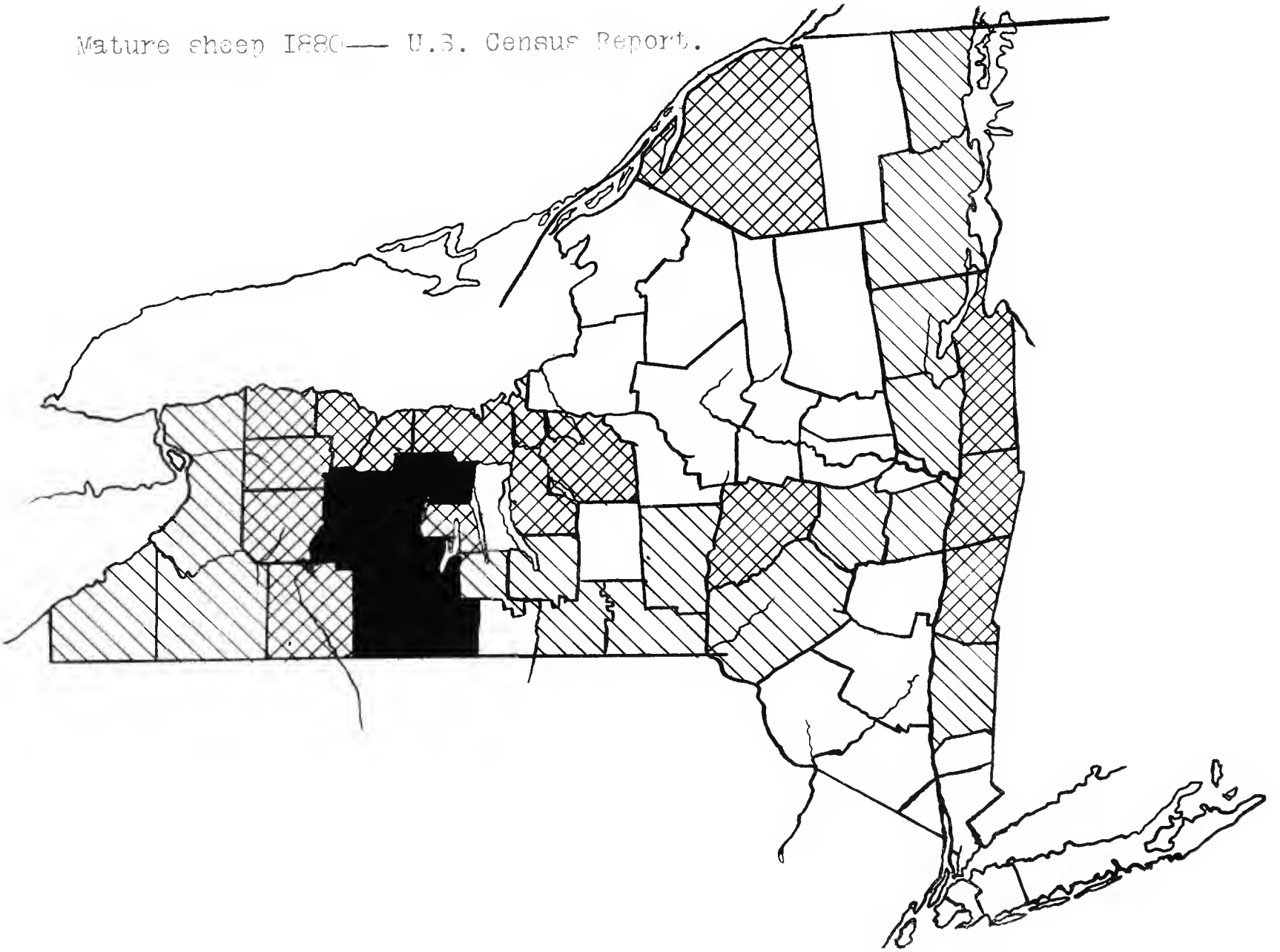



Mature sheep 1900 — U.S. Census Report.

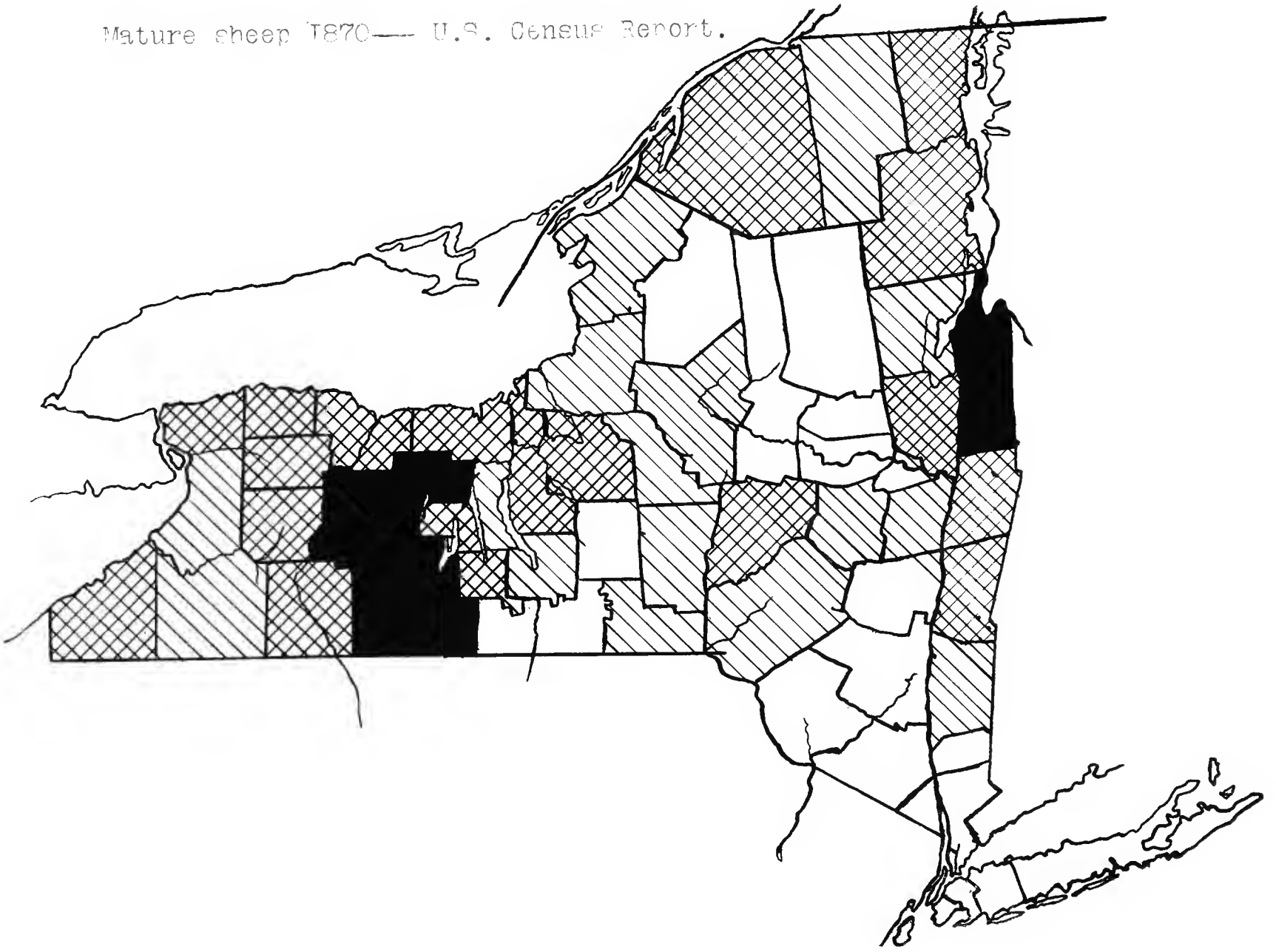
Mature sheep 1850—— U.S. Census Report.



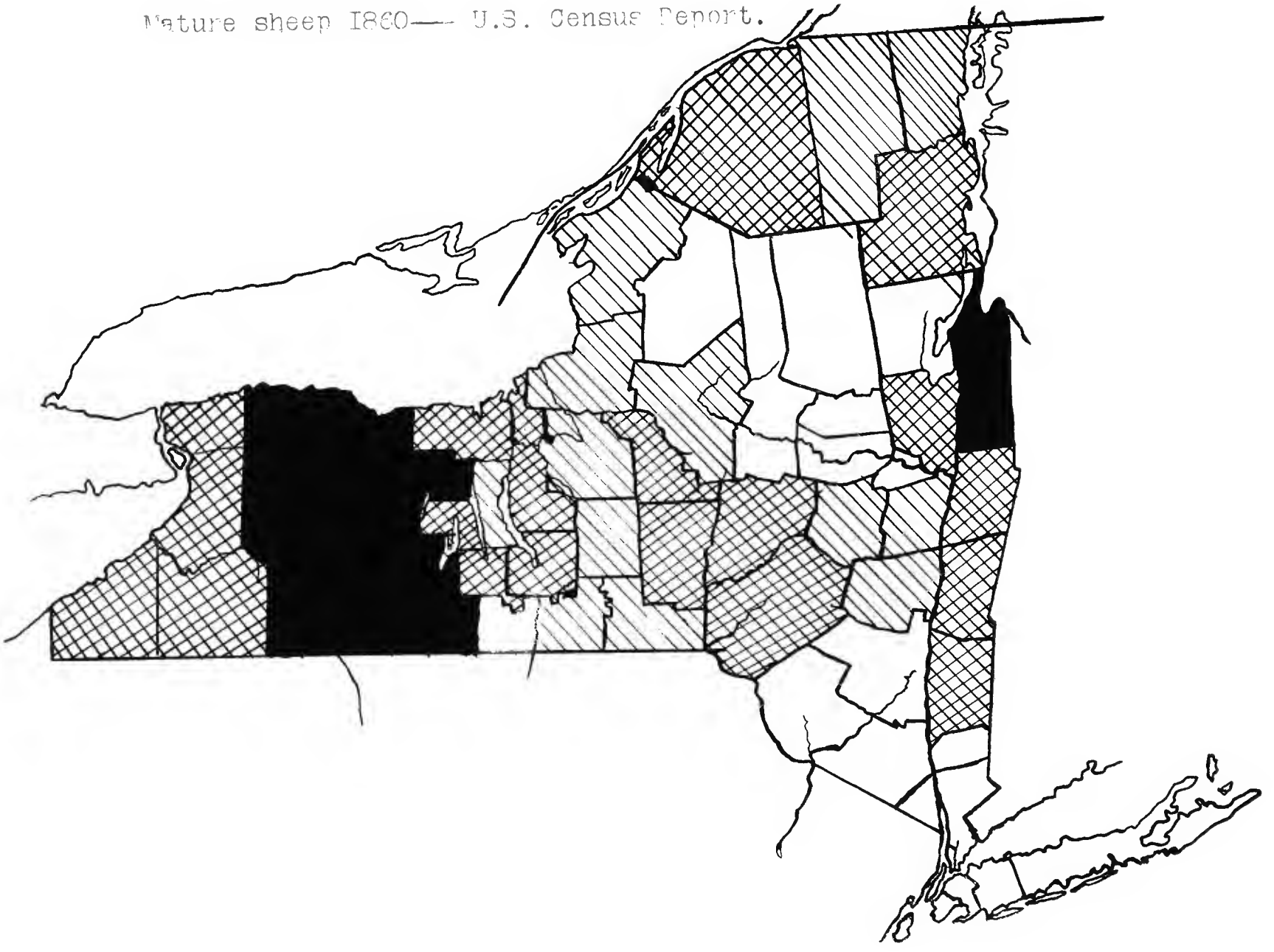
Mature sheep 1880—— U.S. Census Report.

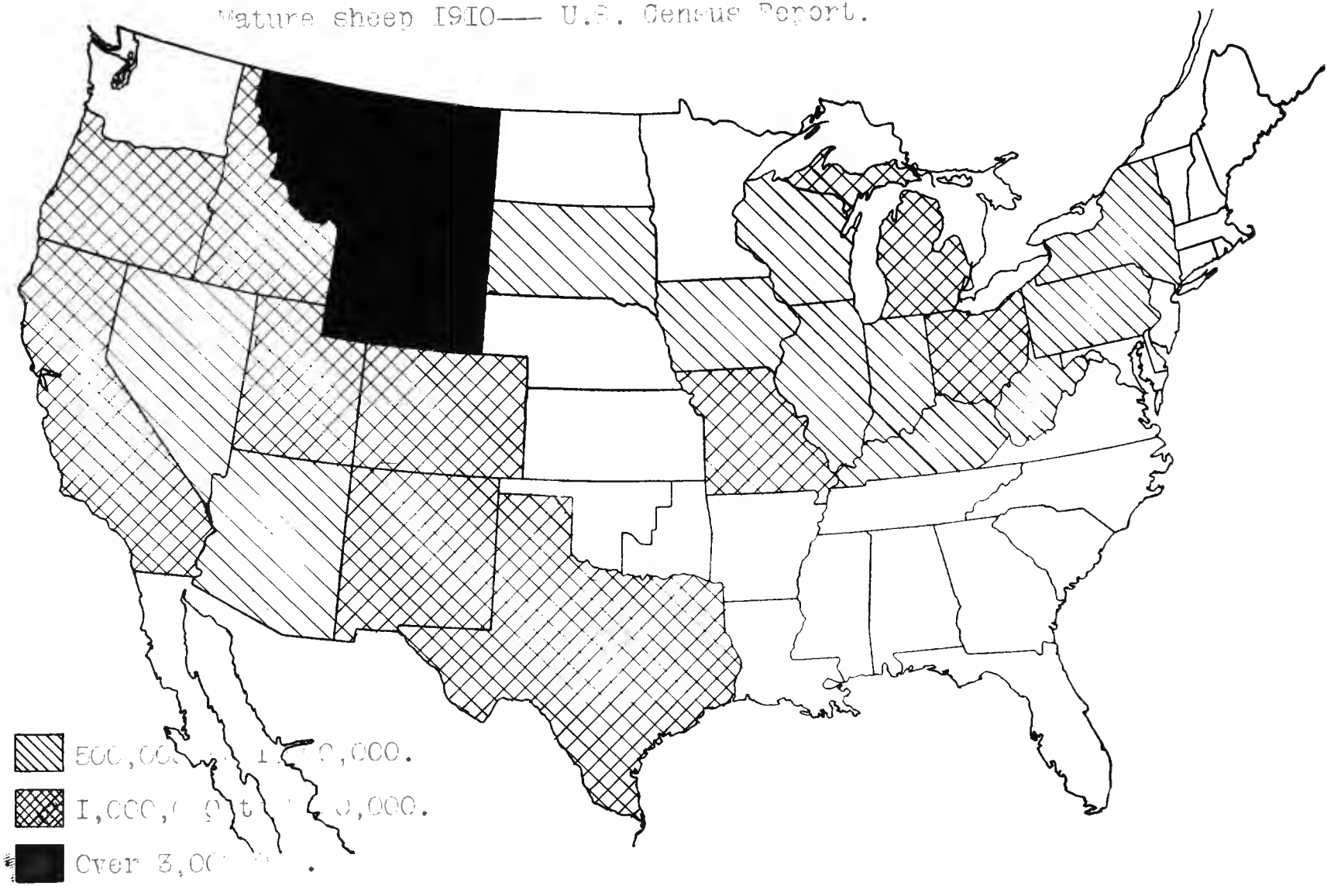


Mature sheep 1870—— U.S. Census Report.

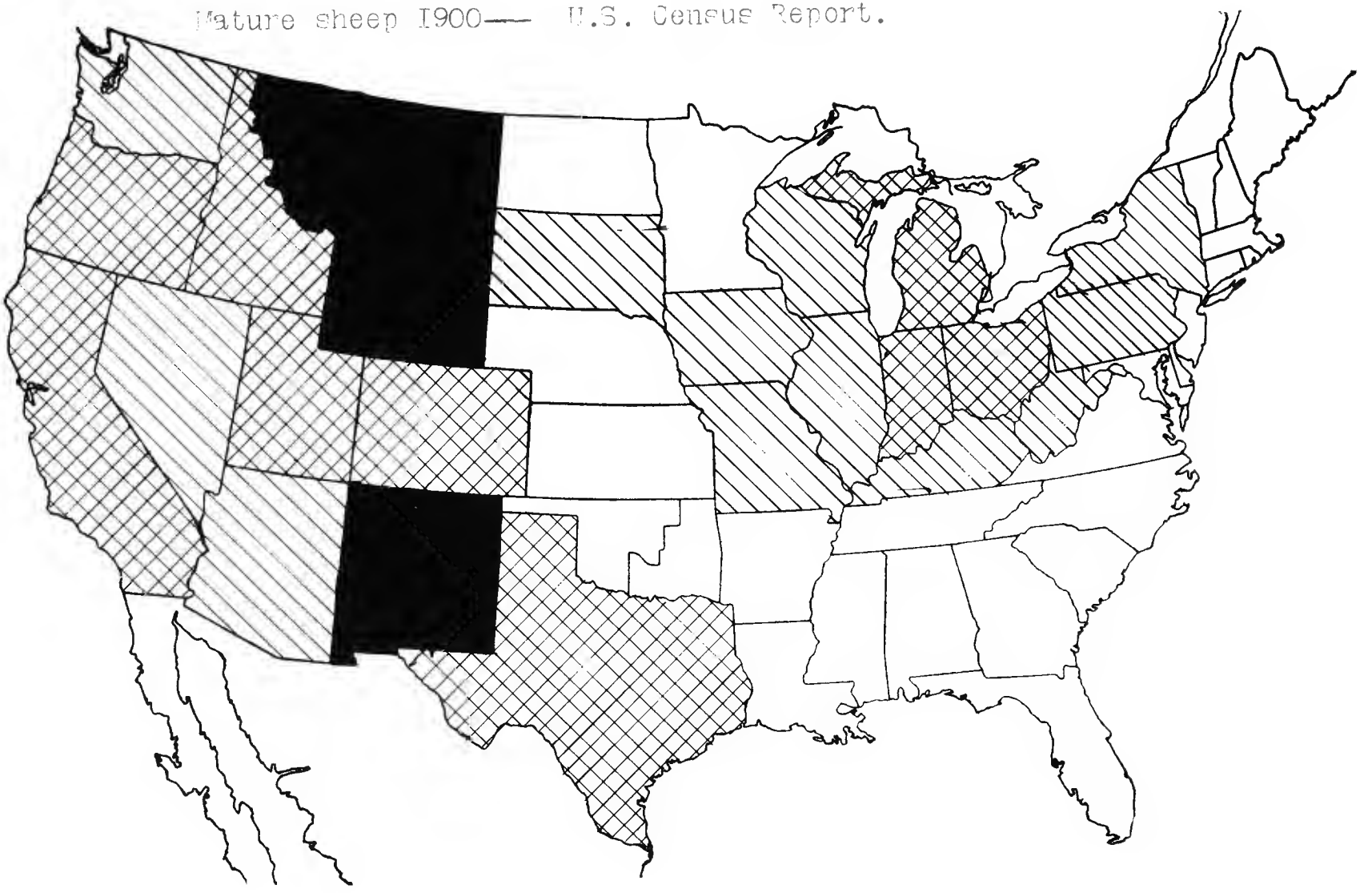


Mature sheep 1860— U.S. Census Report.

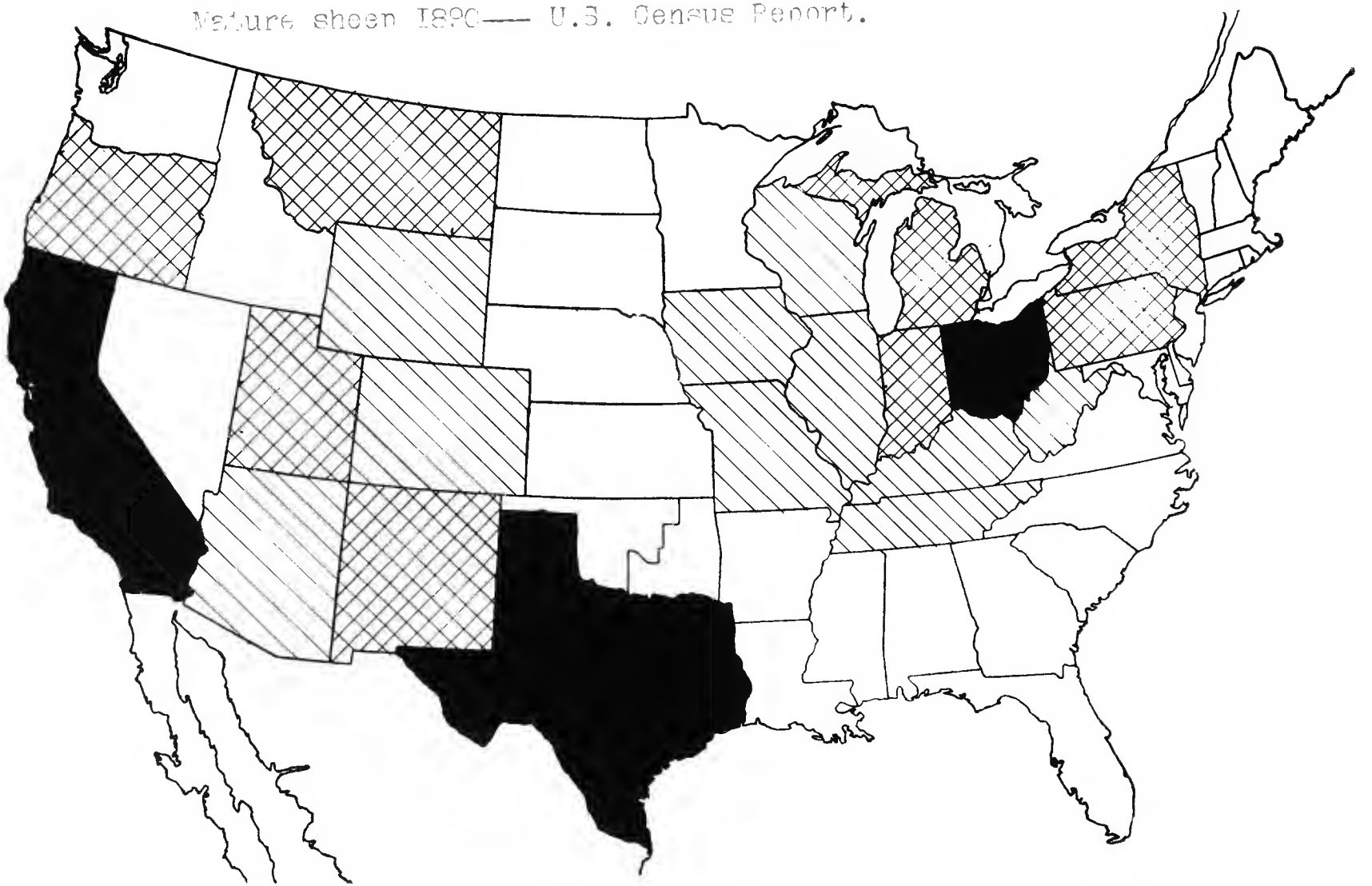



Mature sheep 1910— U.S. Census Report.
500,000
1,000,000.
Over 3,000,000.

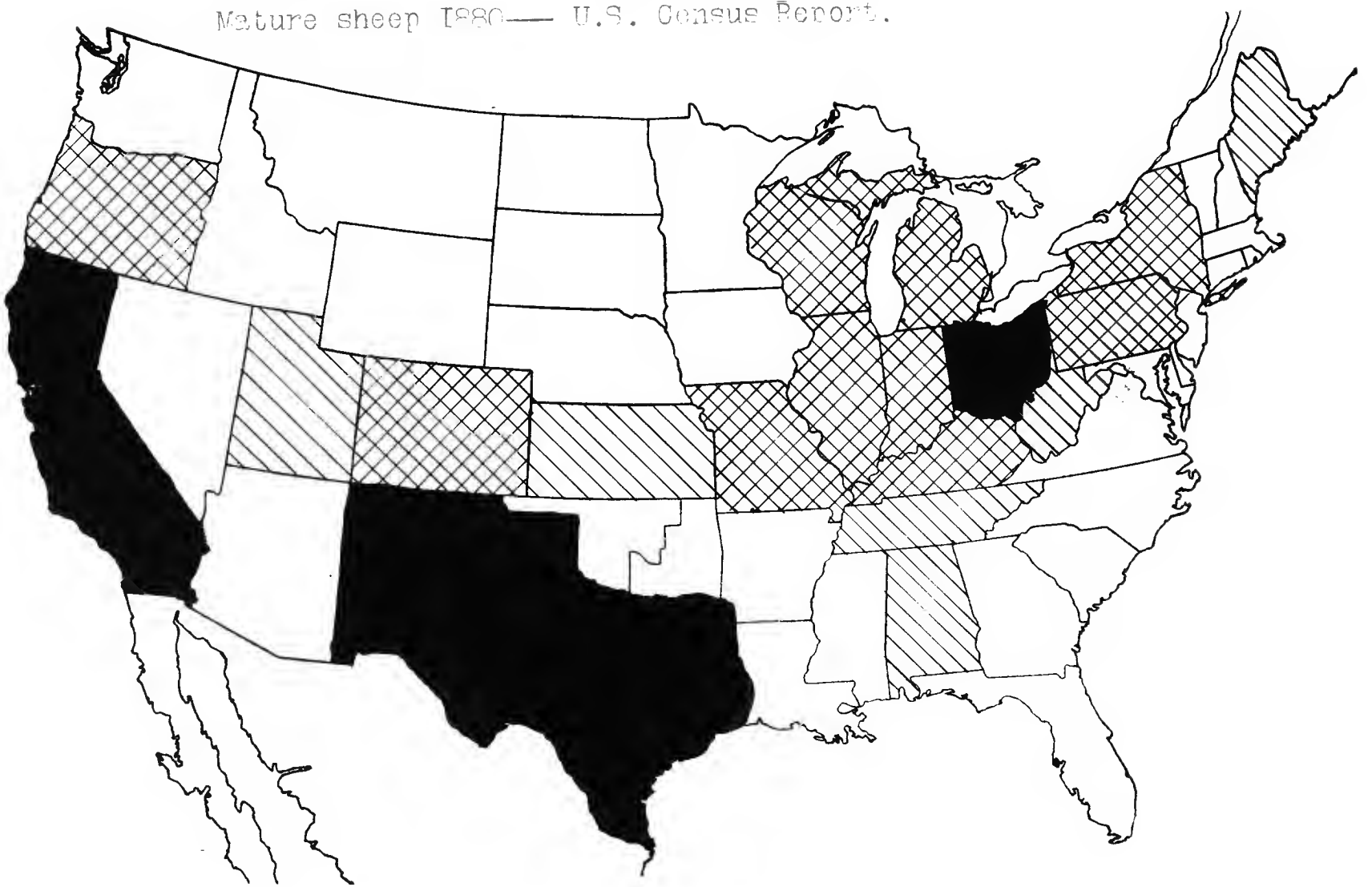
Mature sheep 1900—— U.S. Census Report.



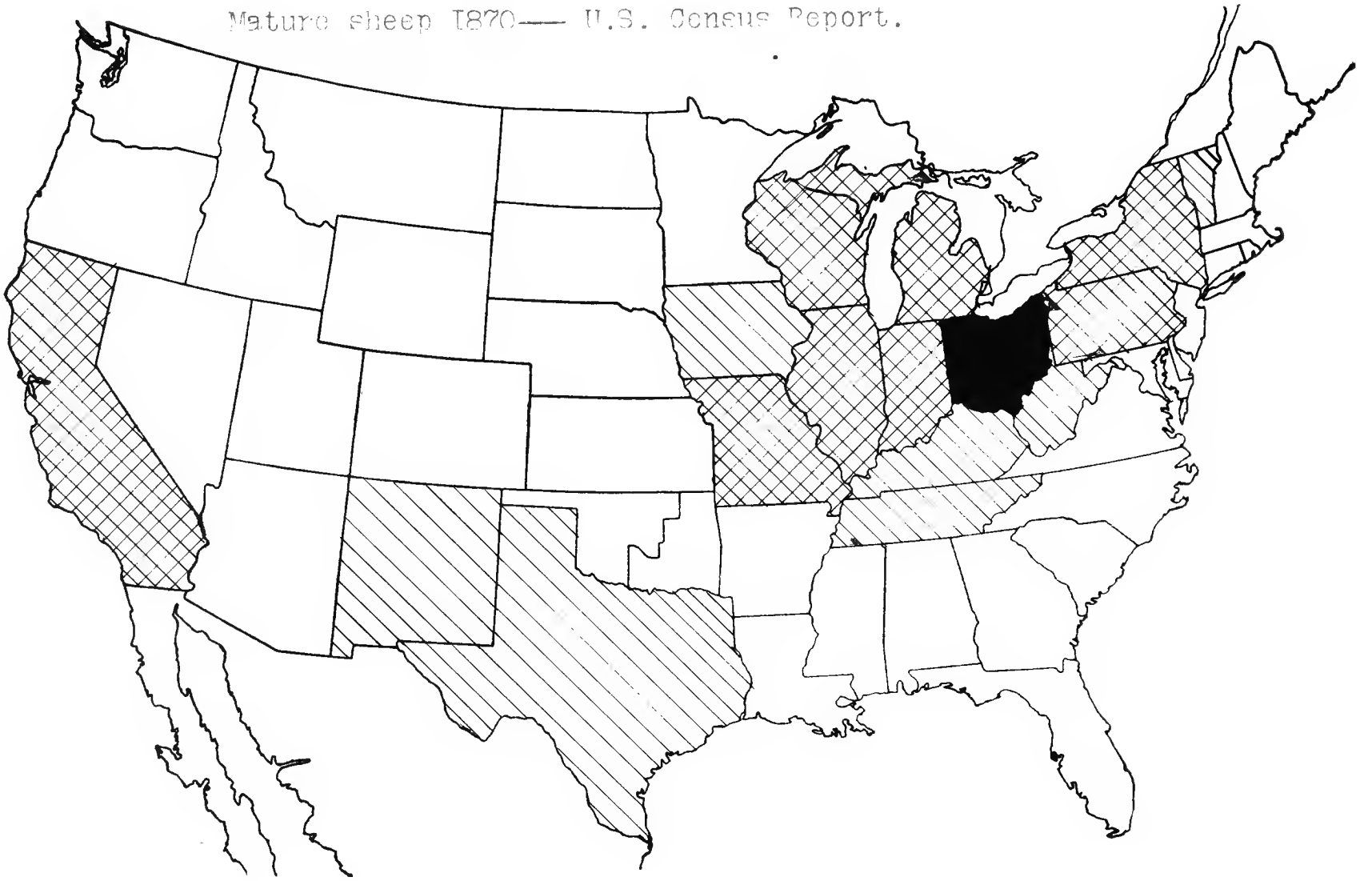
Nature shown 1890—— U.S. Census Report.



Mature sheep 1880—— U.S. Census Report.



Mature sheep 1870— U.S. Census Report.



THE COST OF PRODUCING PEAS FOR CANNING FACTORY

Research Problem in Farm Management

by

Leland A. Wood,
1915.

THE COST OF PRODUCING PEAS FOR CANNING FACTORY ON FIFTEEN FARMS IN OTSEGO COUNTY, NEW YORK.

PURPOSE OF THE WORK AND METHOD USED

The purpose of this investigation was to determine what it costs the average farmer on a dairy farm to produce peas for canning factory. It is a study of the different costs in producing peas and not an argument to prove it is a profitable or unprofitable crop to grow.

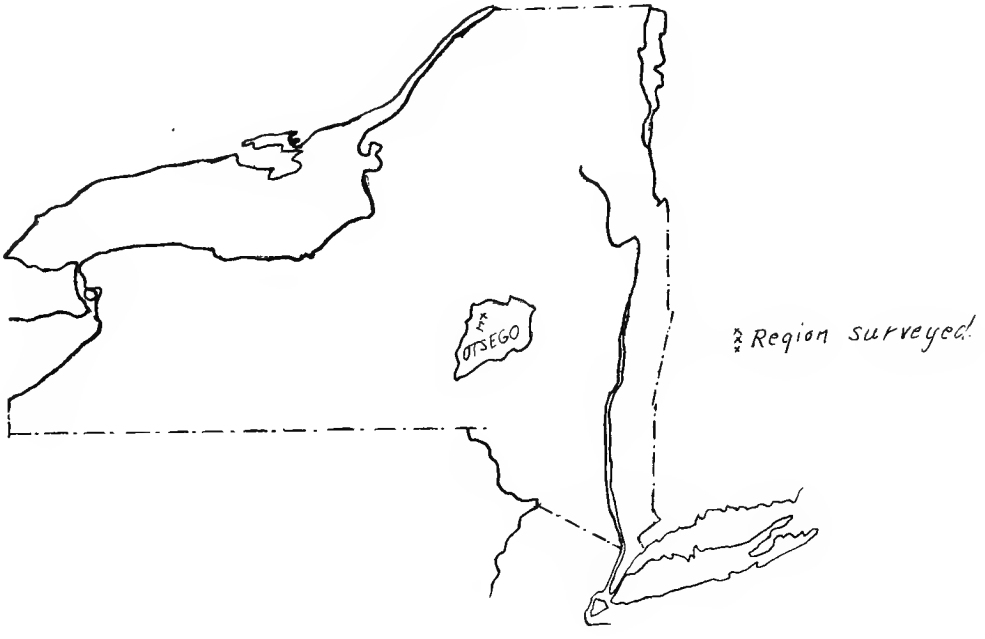
IMPORTANCE OF THE SUBJECT

Otsego County is almost entirely a dairying section, and it is important to know the cost of producing cash crops in order to determine whether under average conditions a farmer can use his land to a better advantage in raising some cash crop as peas or devote it to crops which can be fed to dairy cows.

PLACE AND TIME OF WORK

The section surveyed was a small portion of the townships of Exeter and Plainfield in the northwestern part of Otsego County, which is located a little south

and east of the central part of New York State. Figure 1 shows the location of the County and the townships where the record was taken.



The figures were secured for the year 1914. The farms were not selected in any way, and, as average conditions were desired, fifteen farms were taken which would represent typical rather than exceptional conditions.

AGRICULTURE.

Type. Dairying is practically the only enterprise in this section. There are many large high producing herds and several purebred herds in the section sur-

veyed. The average number of cows on the fifteen farms surveyed was twenty-four. Milk and its products are shipped to New York City, a distance of about two hundred miles.

Topography. The topography is rolling. Most of the records were taken in the Wharton Valley, which consists of farms about half level or "flat" land, as it is called, and half hilly or sloping land. The farms are broken up and most of the fields are small and stony.

Drainage. Practically none of the land is tile drained, and only a small part drained with open ditches. The section is drained by the Wharton Creek, which flows into the Susquehanna River.

Soils. The soil is a medium heavy clay, with a heavy clay subsoil. It is hard soil to work and it is always late in the spring before it can be cultivated because it retains a high percentage of water.

Climate. The climate is particularly favorable for oats and hay. Corn does not mature as a rule, but large amounts of silage corn are grown.

Crops Grown. The principal crops grown are hay, oats and silage corn. Occasionally a farmer raises two or three acres of potatoes, a little barley or buck-

wheat. Of the three main crops, practically all is disposed of by feeding to dairy cows. It is the exception rather than the rule that a farmer sells any produce, and this only hay or potatoes. Some farmers keep small flocks of sheep. Few keep any hogs other than for their own use. Very few colts are raised in this section. The average and variation in size, crop acres, per cent of crops grown, and yields are given in Table I.

The average size of farms was 175 acres ; the largest 290, and the smallest 58 acres. The average value per acre of all farm land was $35.00 and varied from $25.00 to $40.00. There was 68% of the land in pasture, woods, and farmstead. The crop acres averaged 56, or 32% in crops. Of the crop acres, 68.75% was in hay, 10.72% in silage corn, 11.15% in oats, 4.28% in oats and peas for hay, 2.24% in potatoes, and 2.68% in peas for canning factory.

The average yield of hay was 2.1 tons and varied from 1 to 3 tons per acre. The average yield of silage corn was 10 tons, the highest being fifteen and the lowest four tons per acre. The average yield of oats was 36.8 bushels, the highest being 48 and the lowest 18 bushels. The average yield of potatoes was 122 bushels, varying from 82 to 181 bushels per acre. The average

yield of peas was 1528 pounds, varying from 500 to 2214 pounds per acre.

TABLE I.

	Size	Crop Acres	Hay	Hay Yield	Corn	Corn Yield
Average	175	56	38.5	2	6.	10
Highest	290	93	70	3	15.5	15
Lowest	58	33	12	1	2.5	4
% Total			68.75%		10.72%	

	Oats	Oats Yield	Oats & Peas	Oats & Peas Yield
Average	6.25	36.8	2.5	Fed Green
Highest	10.	48.	7.	
Lowest	3.5	18	0	
% Total	11.15%		4.28%	

	Potatoes	Potatoes Yield	Peas	Peas Yield
Average	1.25	122	1.5	1528 lbs.
Highest	3.	181	3.	2214 "
Lowest	1.5	82	1.	500 "
% Total	2.24%		2.68%	

Labor. The land on all the fifteen farms studied was either worked by owners or tenants. The farms ranged from one to three-man farms. In this survey no attempt was made to find the cost of labor because of the fact that so little labor is hired on the majority of the farms, most of the work being done by the farmers and their families. Therefore, in figuring the value of labor 18 cents per hour was used. This means that the cost of labor is equivalent to $1.80 per man working ten hours per day. In the same way 15 cents was charged for each hour a horse worked. This is the equivalent of a team working ten hours a day for $3.00. In a like manner the use of implements or machinery is charged at the rate of 5 cents per hour. The method of finding the number of hours a machine or implement is used is to divide the number of hours of horse labor by the number of horses working on the implement for a certain operation. This means that the cost of a man, team, and machine or implement that is used is $5.30 for a ten-hour day.

The actual number of hours for each operation is given so that a farmer knowing the value of labor under specific conditions can figure the cost. One man working one hour is called one man hour and is indicated

by M. H. One horse working one hour is called one horse hour and is indicated by H. H. The use of an implement for one hour is called one implement hour and is indicated by I. H.

General. The growing of peas for canning factory is of recent development in this County, and in this particular section 1914 was the first year they had been grown. In the early spring of 1914 a representative of the Utica Canning Co., Utica, N. Y. solicited and succeeded in securing promises of sufficient acreage of peas to enable the Company to set up a portable shellery near West Exeter. It was with considerable interest that the farmers awaited the outcome of the 1914 crop to determine whether it would be a paying proposition in connection with dairying. One important factor should be noted. The Canning Company furnishes the seed peas to the farmer for three dollars a bushel, while if they were purchased on the market nine dollars would have to be paid.

Method of Growing. On the fifteen farms from which records were taken, the peas were sown in every case on old ground, following corn. As a rule, the land was seeded with the peas. Two kinds of peas are sown, early and late. Some farms sow one, some another, and some both. The early ones are harvested about the first of

July, and the late ones two to three weeks later. Thus the harvesting period comes right in the haying season, a very inconvenient time unless the time to cut them comes on a cloudy or rainy day, when nothing could be done in the hay field. The peas have to be cut on a certain day when they are at the proper stage of maturity or they are either too soft or too hard. If a farmer is delayed in the haying season, it may be a serious disadvantage.

COST OF PRODUCING.

The average cost of producing an acre of peas on the fifteen farms studied was $30.48. The highest cost on a single farm was $44.21, and the lowest was $21.82. The factors which enter into the cost of producing will be grouped under the following headings : Preparation for sowing and sowing, marketing, and miscellaneous costs. Table II gives these factors, with their variation and per cent of total cost.

TABLE II.

	Average	Highest	Lowest	% Total Cost
Preparation for Sowing & Sowing	$21.57	$29.76	$17.62	70.77
Marketing	6.90	12.15	2.66	22.60
Miscellaneous	2.01	2.30	1.44	6.63
	$30.48	$44.21	$21.72	100.00

Preparing for Sowing and Sowing. The average cost of preparing for sowing and sowing was $30.48, varying ffom $21.72 to $44.21. This was 70.77% of the total cost.

Marketing. Marketing was 22.6% of the total cost and varied from $2.66 to $12.15, depending very largely on how far the crop had to be hauled. The average cost was $6.90.

Miscellaneous Costs. Miscellaneous costs include the interest on the land and taxes. The average cost was $2.01 or 6.63% of the total cost. This varied from $1.44 to $2.30, depending very largely on the price of the land.

PREPARATION FOR SOWING AND SOWING.

Plowing and Preparing. The ground, as a rule, was plowed the fall before. The ordinary two-horse plow is used almost universally in this section. The ground is plowed to a depth of about eight inches. In the spring it is harrowed with a spring tooth harrow or disced and harrowed until the soil is thoroughly pulverized.

Sowing. The peas are sown in an ordinary grain drill with a grass seeder and fertilizing device attached.

COST OF PREPARING FOR SOWING AND SOWING.

The various operations used in determining the cost of preparation for sowing and sowing are shown in Table III.

TABLE III

Operation	Average			Highest			Lowest			% Total Cost
Plowing	6.41	M.H.	$1.16	8	M.H.	$1.44	4	M.H.	$0.72	3.8%
"	12.82	H.H.	1.92	16	H.H.	2.40	8	H.H.	1.20	6.26
"	6.41	I.H.	.33	8	I.H.	.40	4	I.H.	.20	1.10
Harrowing	5.89	M.H.	1.07	12	M.H.	2.96	2.66	M.H.	.48	3.50
"	12.82	H.H.	1.92	24	H.H.	3.60	5.2	H.H.	.78	6.30
"	5.89	I.H.	.27	12	I.H.	.60	2.66	I.H.	.13	.90
Sowing	1.5	M.H.	.27	2	M.H.	.36	.75	M.H.	.14	.90
"	3	H.H.	.46	4	H.H.	.60	1.5	H.H.	.23	1.50
"	1.5	I.H.	.08	2	I.H.	.10	.7	I.H.	.04	.30
Seed			9.00			9.00			9.00	29.52
Fertilizer			2.84			7.65			----	9.32
Manure			2.25			6.00			.85	7.37
			21.57							70.77

Plowing. The average number of hours of man labor was 6.41 and varied from 4 to 8. The average cost of man labor at 18 cents per hour in plowing was $1.16, or 3.8% of the total cost. This varied from $0.72 to $1.44. The average number of hours of horse labor was 12.82, and

and varied from 8 to 16 hours. The average cost was $1.92 and varied from $1.20 to $2.40. This was 6.26% of the total cost.

The average time an implement was used was 6.41 hours. This varied from 4 to 8. The average cost at 5 cents per hour was 33 cents and varied from 20 cents to 40 cents. The per cent of total cost was 1.1%. Thus the total cost of plowing was $3.41, the equivalent of one man and a team working 6.41 hours, and was 11.17% of the total cost.

Harrowing. Harrowing required 5.89 man hours, varying from 2.66 to 12. The average cost of man labor was $1.07, 3.5% of the total cost, and varied from $0.48 to $2.96.

It required 12.82 horse hours on the average, varying from 5.2 to 24. The average cost of horse labor was $1.92, or 6.3% of the total cost. This varied from $0.78 to $3.60.

Harrows or discs were used 5.89 hours, varying from 2.66 to 12. The average cost of their use was 27 cents or 0.9% of the total cost. The cost varied from 15 cents to 60 cents. The total average cost of harrowing was $3.24, 10.70% of total cost. It is the equivalent of a man and team(in one case 3 horses), working 5.89 hours.

Sowing. Sowing or drilling averaged 1.5 man hours, varying from .75 to 2. The average cost was 27 cents, varying from 14 cents to 36 cents. This was 0.9 of the total cost.

It took 3 horse hours on the average, varying from 1.5 to 4. The average cost was 46 cents, varying from 23 cents to 60 cents. This was 1.5% of the total cost.

The use of drill averaged 1.5 hours, varying from .75 to 2. The average cost was $0.08. This varied from $0.04 to $0.10. The per cent of total cost was 0.3%. Drilling cost 81 cents, or 2.7% of total cost. This was the equivalent of a man and team working 1.5 hours.

Seed. The cost of seed was $9.00 per acre, which was 29.52 per cent of total cost.

Fertilizer. The average cost of fertilizer was $2.84, or 9.32% of the total cost. It varied from $0.00 to $7.65.

Manure. The average cost of manure was $2.25 per acre and varied from $0.85 to $6.00. This was 7.37% of the total cost.

MARKETING

Marketing includes getting the crop from the field to the shellery. Normally, the peas are cut with a mowing machine, the vines being thrown back from the

machine by men with forks. In two cases the peas were lodged so badly that they had to be cut by hand, and in nearly every case they could be cut but in one direction.

The peas are then loaded on hay wagons and taken to the shellery, a distance varying from .25 to 2.5 miles. The average distance was 1.43 miles. The peas are then run through the sheller and the peas are shelled out. They run over a screen and the hard ones are discarded. The vines are thrown out in the rear of the machine and are loaded and carted back home. The shelled peas are boxed, loaded into an automobile truck and taken a distance of about nine miles to the farm's nearest canning factory.

COST OF MARKETING

Because of the difficulty of the farmers in telling how much time was spent in cutting alone, cutting and hauling, the operations in marketing are grouped together.

The average cost of marketing, highest and lowests costs, and per cent of total cost are given in Table IV.

TABLE IV.

	Average	Highest	Lowest	% Total
Cutting	19.487 M.H. 3.51	30 M.H. $5.40	5.33 M.H. $0.96	11.5
Hauling	19.333 H.H. 2.90	40 H.H. 6.00	10.40 H.H. 1.56	9.5
	9.8 I.H. .49	15 I.H. .75	2.7 I.H. .14	1.6
	6.90	12.15	2.66	22.6

The cost of marketing averaged 6.90 and varied from 2.66 to 12.15, depending on the distance from the shellery. The per cent of total cost was 22.6%.

It required the equivalent of one man working with a team and either moving machine or wagon 9.8 hours. This varied from 5.33 hours to 30 hours.

MISCELLANEOUS COSTS

The miscellaneous costs include interest on land and taxes. Interest was figured at the rate of 5% and taxes at the rate of $7.50 per $1,000. The average amount of interest was $1.75 per acre, varying from $1.25 to $2.00. This was 5.78% of the total cost. The average amount of taxes was $0.26, varying from $0.19 to $0.30. This cost was .85% of the total cost. Table V shows the above in tabular form.

TABLE V.

	Average	Highest	Lowest	% Total Cost
Interest	$1.75	$2.00	$1.25	5.78
Taxes	.26	.30	.19	.85

RETURNS FROM THE PEA CROP

The yield of peas was from 500 to 2214 pounds per acre, averaging 1523. The price received was $2.15 per cwt. The returns per acre varied from $10.75 to $47.60. The average was $32.74. Deducting $30.48 from this leaves a profit of $2.26 per acre. This does not take the value of the vines into consideration.

The average value of the vines for fodder was $7.50, varying from $0.00 to $20.00 per acre. Adding this gives a profit of $9.76. This seems to indicate that the profit is largely dependent on the value of the vines for fodder.

SUMMARY

These results seem to indicate that the average farmer, if he can use the vines for fodder to a good advantage, is justified in raising peas for canning factory. However, I am led to believe that unless a man is near a shellery and has enought help so he will not be hindered in haying season, he is hardly justified in raising peas for canning factory.

THE RELATION OF TENANCY TO SOIL AND THE VALUE OF LAND IN NEW YORK STATE.

Research Problem in Farm Management

by

F. A. Roper,

1915.

THE RELATION OF TENANCY TO SOIL AND THE VALUE OF LAND IN NEW YORK STATE.

Where are the tenants in New York State and how are they distributed ? Are they scattered about by chance or have they settled in particular regions ? In Colonial times there were few tenants. Every one that wanted work done by some one else usually exchanged labor. Increased population and an advance in the price of land have caused conditions to change. Men who had no means were obliged to work on shares or pay rent to the owner of the land in order to live on a farm. This condition increased and in 1880, when statistics of farm ownership were published in the Census, about 74.5 per cent of the farms in the United States were operated by owners. Since that time the proportion has fallen considerably, to 71.6 per cent in 1890, 64.7 per cent in 1900 and 62.1 per cent in 1910. The growth of the tenant class is caused by the rise in land values in the past three or four decades. When land increases in value, there are less who can afford to buy, hence those people rent instead of buying. The greater the per cent of increase, so much longer time is necessary before tenants are able to buy. The per cent of tenancy in New York is much lower than that for the United States. In 1910 the per cent of ownership was 77.3 per cent, which showed an increase over 1900 when per cent of ownership was 74.4 per cent. This may indicate that New York State is tending to increase ownership and decrease tenancy

although it is much lower than the United States as a whole.

In some parts of New York State the per cent of tenancy is as low as 9.4 per cent. This is in Rockland County. In New York County the per cent is as high as 74.1 per cent. These are both abnormal. The first one is due to land being held by wealthy men and not much is rented, while the second is due to the high value for trucking purposes and nearness to New York City.

Table I. Showing Relation of Per Cent of Tenancy to Value per Acre of Land.

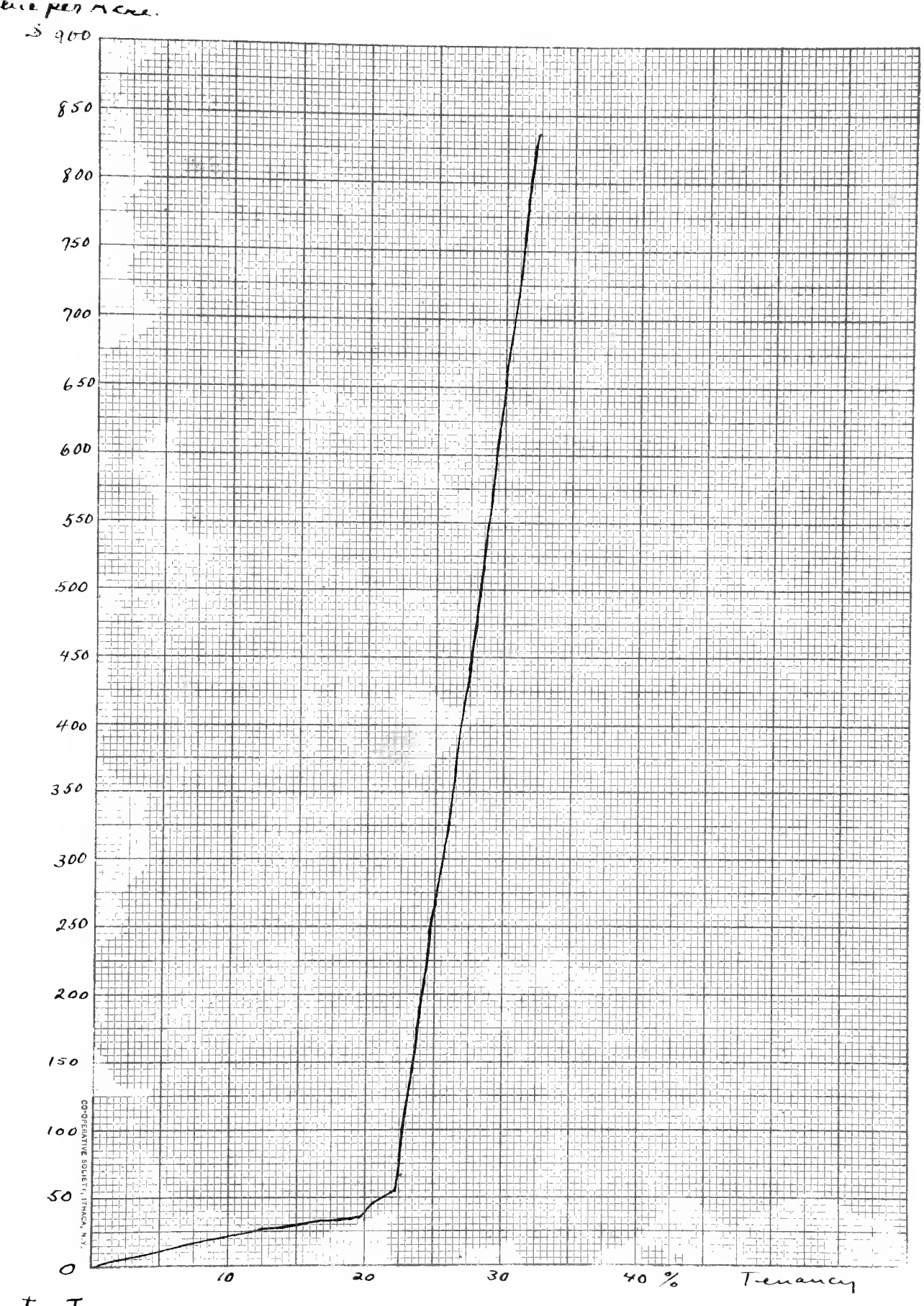
Group	Value per acre	Number of counties	Average per cent tenancy	Average value of land
1	20 - 30	9	14.8%	$25.7
2	30 - 40	19	19.1	35.
3	40 - 50	7	21.4	46.2
4	50 - 60	6	24.1	55.5
5	60 - 70	5	24.6	66.1
6	70 -140	7	25.2	94.4
7	Over 140	8	34.5	835.7
		61 Counties		

In Table I, the relation of per cent of tenancy to value of land per acre is shown. Certain counties are grouped into different classes according to the value per acre. In the first group the average percentage of tenancy was 14.8 per cent and the average value of land was $25.7 per acre. The value of land per acre includes the buildings on the farm. There may be some question as whether this is justifiable or not, but taken as a whole the buildings are an indication of the value of the farm, but the tenant usually looks to the land rather than the buildings. In the second group the average

per cent of tenancy was 19.1 per cent and the average value of the land occupied by this group was $35.

In the third group the average percentage of tenancy was 21.4 per cent and the land value was $46.2 per acre. In the fourth group the average percentage of tenancy was 24.1 and the land value was $55.5. In the fifth group the average percentage of tenancy was 24.6 per cent and the land value was $66.1 per acre. The average percentage of tenancy increases with the value of the land and in the sixth group the average percentage of tenancy was 25.2 per cent and the land was valued at $94.4. The last or seventh group represents abnormal conditions. It includes counties in the vicinity of New York City. The average percentage of tenancy is 34.5 per cent and the average value of the land is $835.7. This group was not put in to show a marked increase in tenancy but to make the report complete by including all the counties in the state. Chart I shows the increase in percentage of tenancy on lands of higher value in the form of a curve.

There are some cases where value of land is high and percentage of tenancy is low as in Rockland County. Here the average value of the farm land for the County is $195, and the average per cent of tenancy is only 9.4 per cent. This is due to the fact that most of the land is held by wealthy men and not much of it is rented. It is on the Hudson River and only a few miles from New York City. But as a rule high priced land indicates a high per cent of tenancy; this may be caused by tenants moving to these regions or by rich men owning the land and returning to town and leaving the farm



rt I

Fig 1 Relation of the Value of land to % of Tenancy

for tenants.

Table II. Showing Relation of Per Cent of Tenancy to Soils of Different Degree of Fertility.

Group	Number of Counties	Series of soil	Per cent of tenancy
1	10	Mountainous	14.13%
2	15	Volusia, DeKalb, Lackawanna	19.95
3	8	Dutchess, Gloucester, Hudson	21.43
4	20	Dunkirk, Mohawk, Vergennes, Ontario	24.29
5	8	Truck Counties (Norfolk and Gloucester	34.5

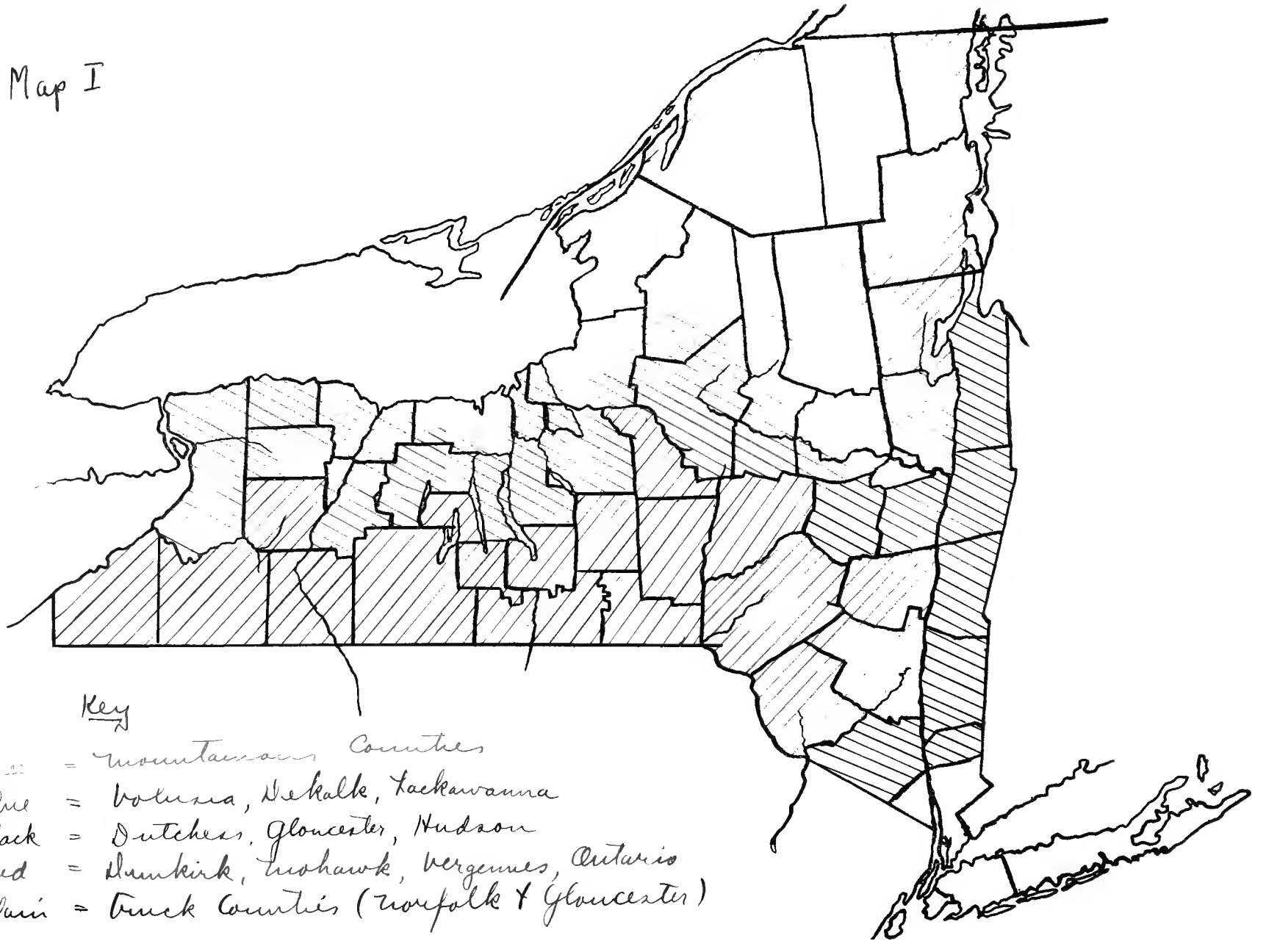
The second table shows the relation of the per cent of tenancy to soils of different degree of fertility. The state is divided up into five regions of different soil series as indicated on Map I. These groups are

1. Mountainous,
2. Poor soil,
3. Fair soil,
4. Good soil and
5. New York City soil.

In order to understand how these soils are formed and a little bit about their composition, a very brief description is given.

In the mountainous group of counties little can be said of the soil. There is probably some very productive soils in each of these counties, but they represent a small pro-

Map I


Key
= mountainous Counties
blue = Voluma, DeKalb, Lackawanna
black = Dutchess, Gloucester, Hudson
red = Dunkirk, Mohawk, Vergennes, Ontario
plain = Rock Counties (Norfolk & Gloucester)

portion of the total farm land. Most of the counties contain parts of the Catskill and Adirondack Mountains. As low as 30 per cent of the total area is in farm lands in some of the counties and sometimes only a small proportion of this is improved land. Essex, Franklin, Clinton and Greene Counties are some of the counties that are representative of this group. These counties have very few tenants in proportion to number of farms.

The second group contains such soils as Volusia, Lackawanna and DeKalb series. Volusia series was formed by glaciers grinding up Chemung and Portage shales. Lackawanna series was formed by glaciers grinding Oneonta shale. DeKalb series represents the only residual soil in the State and comes from the same rocks as the Volusia series. All these soils are light brown to yellow gray in color, low in lime and usually acid. The humus content is low and drainage is usually defective. Chemung, Tioga and all the southern tier of counties represent this group of soils.

The third group of soils contains such series as Dutchess, Gloucester and Hudson. Dutchess soil is the result of glacial till from the metamorphosed rocks of Hudson Valley. Hudson series are glacial lake and stream terrace and occur along the Hudson River. All three of these soils are low in lime and deficient in organic matter. The first two are poorly drained soils but the last one is well drained. Columbia, Dutchess and Orange Counties are fair representatives of this group.

The fourth group contains such series as Ontario, Mohawk,

Dunkirk and Vergennes. Ontario series comes from a glacial till derived from sandstones and limestones of Central New York. The color is medium brown or blackish and the humus content is above the average for the State. The Mohawk series have passed through complicated geological processes. The soils may be either a till, a glacial lake deposit or a reworked material of mixed origin. The humus content and drainage vary from good to poor. The Dunkirk series is the result of the wash from the Volusia soil to the south and the Ontario on the North. Lime content is low, drainage is fair and humus content is medium. Vergennes soil is similar to Dunkirk; it is a darker soil, responds readily to lime, and when well drained it is one of the best soils of the state. Livingston, Jefferson and Genesee Counties are typical counties of this group.

In the last group of counties the soil series are Gloucester and Norfolk. Norfolk series contain soils of marine formation. Most of it is composed of sand and gravel bed. Drainage is good but the lime and humus content is usually low. This group would really belong to the poor or medium soils of the state, but due to their nearness to New York City, they have an enormous value for truck crops and are farmed on a very intensive scale. Fertilizer is used in enormous quantities each year to keep up the productivity. Suffolk and Westchester are typical representatives of this group.

The second table shows that if soils are graded according to their productivity and the percentage of tenancy, the counties having the richest soils have the highest percentage of tenancy. In the mountainous group the average per cent of

tenancy is 14.14 per cent. In the second group there is a little higher percentage of tenancy. Although this group contains the most unproductive soils of the State, the per cent of tenancy is 19.93 per cent. In the third group the soil is a little better and the rate of tenancy is higher, 21.43 per cent. In the fourth group the very best soils of the State are found. The rate of tenancy is 24.29 per cent. In the last group we have the highest priced land and probably the most productive; this is not due to the natural fertility of the land, but to the fact that the land is so valuable for trucking purposes. The rate of tenancy in this group is 34.5 per cent. Chart II shows a curve drawn to represent this increase graphically.

Table III. Showing the Relation of Per Cent of Tenancy to Number of Farms for Rent or Sale in Different Counties of New York State.

Group	Farms for sale	Number of counties	Average Number farms for rent or sale	Average tenancy
1	0	8	0	36.57%
2	0 - 10	10	4.2	22.
3	10 - 20	23	15.6	21.2
4	20 - 30	7	23.3	17.6
5	30 up	11	51.6	18.6
		61 Counties		

In Table III the relation of the percentage of tenancy to number of farms advertised for rent or sale in different counties of the State is shown. This does not show all the farms for sale in the State, but it does show the same rela-

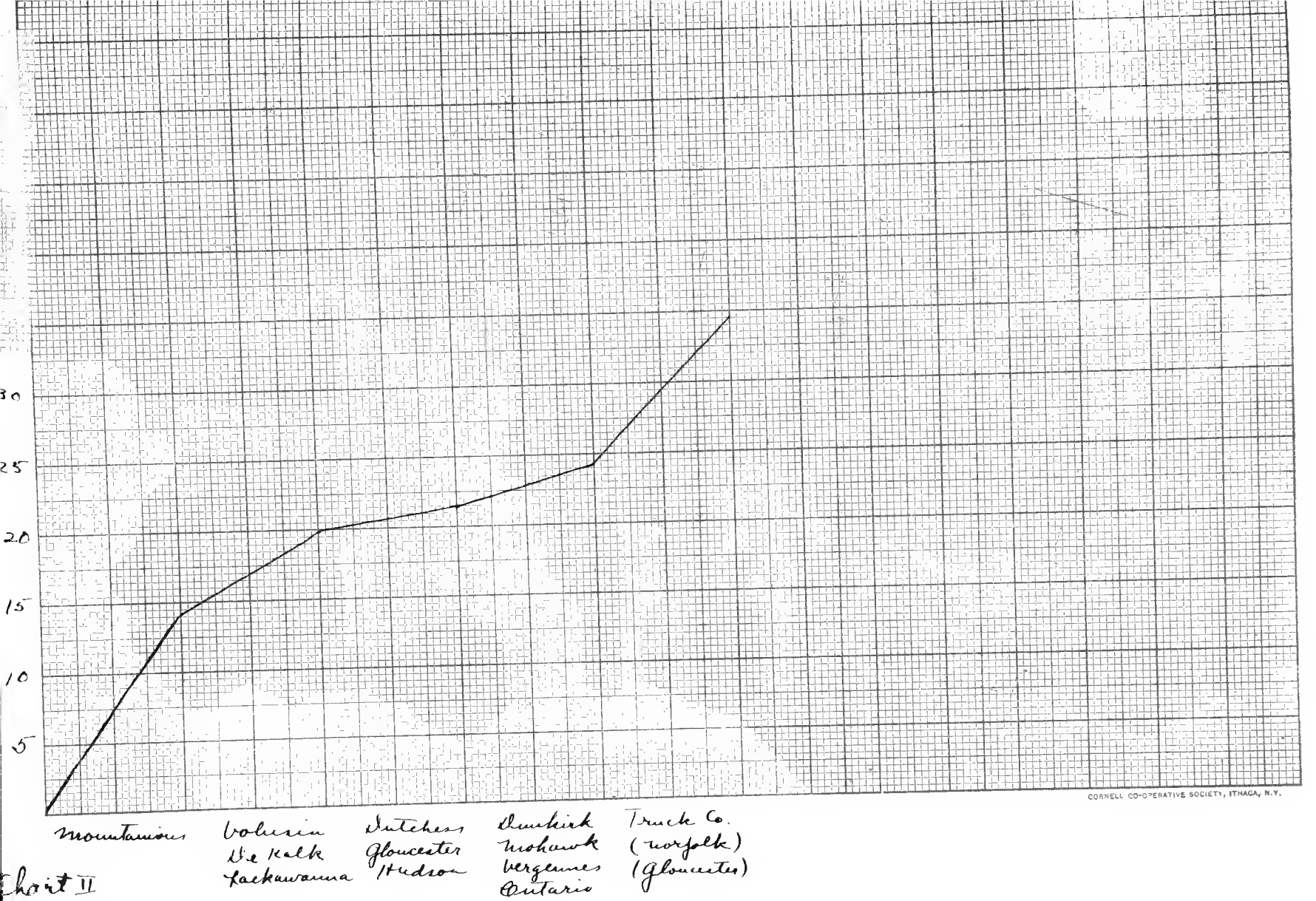


Chart II

The relation between kind of soil and percentage of tenants

tive numbers of farms for sale in different counties. (The Data for this were taken from Bulletin 55 published by the New York State Department of Agriculture entitled "Farms for Sale or Rent in New York". The service is free to every one so should be typical of the State.

There were 8 counties that had no farms for sale or rent. Some of these counties were Niagara, Putnam and Richmond. In this group of counties the average per cent of tenancy is 36.57 per cent. In the second group of 10 counties there was an average of 4.2 farms for sale or rent and the average per cent of tenancy was 22 per cent. Such counties as Schenectady, Wayne and Yates are representative of this group. In the third group of 23 counties the average number of farms for sale was 15.6 and the average percentage of tenancy was 21.2 per cent. Such counties as Washington, Suffolk, Orleans and Onondaga were in this group. The fourth group of seven counties has an average of 23.3 farms for sale and the percentage of tenancy is lowest for the entire state, being only 17.6 per cent. There were such counties as Saratoga, Steuben and Tioga. The fifth group of 11 counties has an average of 51.6 farms for sale and the percentage of tenancy is 18.6 per cent. This is a little higher than the preceding group but lower than all the others. Such counties as Ulster, Otsego, Schoharie and Madison are represented by this group. In other words, the larger the number of farms for sale, the less the per cent of tenancy. This same relation is expressed graphically by the curve in Chart III.

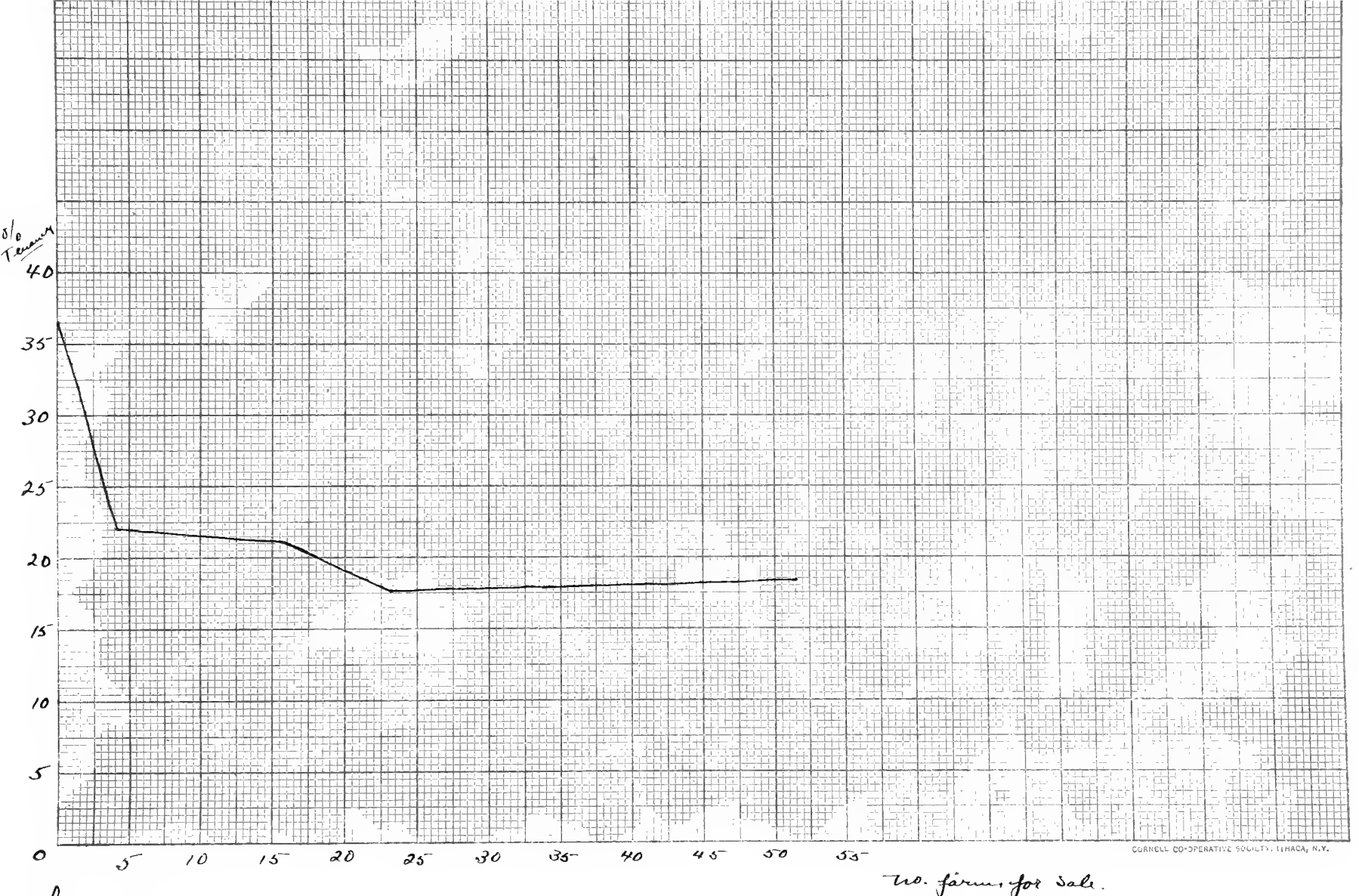


Chart III

The relation of number of farms for sale (1914) to percentage of tenancy in different counties

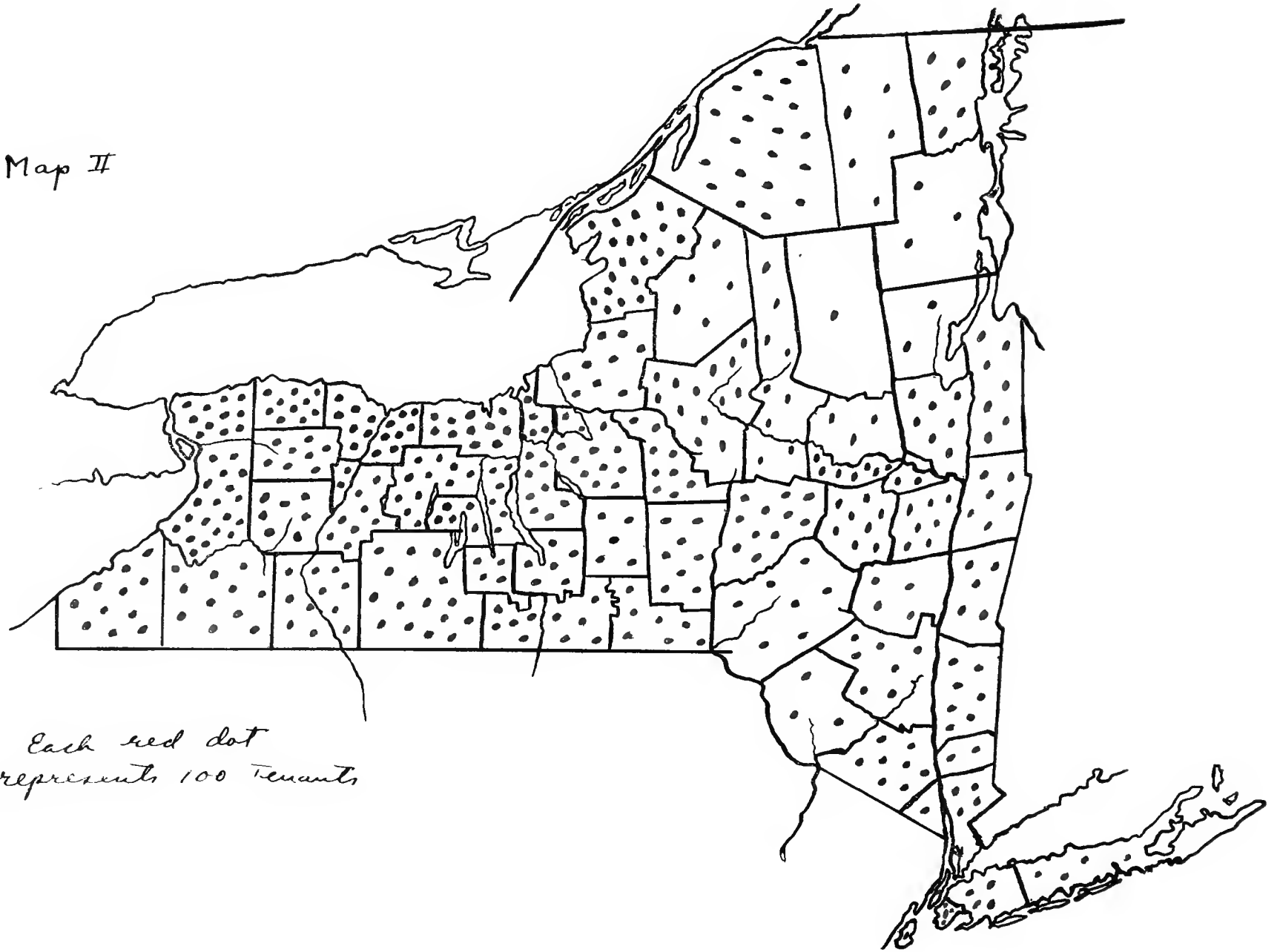
Map II shows the manner in which tenants are distributed by counties. Each red dot represents 100 tenants.

The three foregoing relations show that tenants are on the most productive land. There were 44,872 tenant farmers in New York in 1909. About 50 per cent or 20,110 of these were in the 20 counties containing the best soils. Or, in other words, one-half of the tenants are in one-third of the counties of the State. There are very few cases, as in Oneida and Dutchess Counties, where the soil of the county is good and the per cent of tenancy is small. Although there are some cases, these are generally due to other influences, as mountains, rivers and nearness to market. Sometimes the wealthy classes hold many such places as summer resorts. The tenant farmer wants to farm land that produces most so naturally drifts away from the poorer section into better ones. He keeps less cattle than the owner that works his own farm. This relation is shown in the following Table IV from Missouri Bulletin 121.

Table IV. Live Stock per Farm on Farms of Owners and Tenants.

	Owners	Tenants
Work horses	5.3	4.6
Cows	4.5	3.1
Sheep	4.	1.6
Sows	3.8	2.8
Hens	117.1	104.2
Colts	1.4	1.
Total animal units	20.5	15.
Crop acres	68.2	82.3
Crop acres per animal unit	3.33	5.49

Map II



Each red dot
represents 100 Tenants

This table shows that tenants do not have enough animal units per acre to even keep good land in as good condition as the owner. Another reason why tenants do not improve a region is due to the comparatively short length of time they stay on a place. They do not stay long enough on a farm to aid in building it up. They roam about from place to place and turn everything possible into cash. The following Table V from Missouri Bulletin 121 shows the distribution of tenant farms by period of continuous residence on the same farm.

Table V. Distribution of Tenant Farms by Period of Continuous Residence on Same Farm.

Number of years on same farm	Per cent of total farms
2 years or more	43.5%
3 - 5 years	34.
6 - 10 years	11.2
11 - 15 years	4.8
Over 15 years	6.5

"77.5 per cent of the tenants remain on the same farm less than 5 years, while nearly one-half the tenants stay on the same farm less than 2 years. Nothing could better illustrate the fact, that perhaps the greatest handicap of the tenant is the fact that he does not remain on the same farm long enough. Although tenants do not remain long on the same place, they usually do more labor, or, at least, do more productive labor than the farm owner".

The following Table VI from Missouri Bulletin 121 shows that the tenants have more productive man work units than the

farm owner.

Table VI. Percentage Distribution of Farms by Productive Man Work Units.

	Percentage of farms in each class	
	Owners(249)	Tenants (170)
100 or less	30.6%	19.2%
101 - 125	16.3	14.1
126 - 150	12.4	20.1
151 - 175	11.2	12.9
176 - 200	11.2	10.5
201 - 225	7.4	11.5
Over 225	10.9	11.7

"The tenant grows more grain crops and sells a larger proportion of those grown than does the owner. The tenant keeps one animal unit for every 5.5 acres of ground while the owner has one for every 3.5 acres".

The foregoing may be called disadvantages of the tenant from the standpoint of permanent agriculture. Many people have looked upon tenantry as a necessary community evil and ascribed conditions to our too democratic conditions of owner ship. It is impossible to say whether this is true or not because there are many advantages as well as disadvantages. Among the advantages the following are important :

1. Tenant farms more land with same equipment.
2. Tenant gets a higher labor income.
3. Tenant puts in more productive horse and man work units.

The present system of tenantry is undesirable because it depletes the soil and causes tenants to become careless

and shiftless because of their roaming about from place to place. There are two things which landowners might do to change these conditions : first, rent their farms for a period of not less than 5 years; and second, compel the tenant to keep and feed a certain amount of live stock on the farm. Whether this would reapportion the tenants in New York State is hard to say, but it would have a tendency to improve the farm land in general.

Size of Farms in Counties and Percentage of Tenancy.

In Table VII the relation of size of farms to percentage of tenancy is shown. The counties are classified into groups according to the average size of the farms. We find that if the counties are classified in this way and then the percentage of tenancy found for these groups, that the greater percentage of tenancy is in the counties containing the smaller farms.

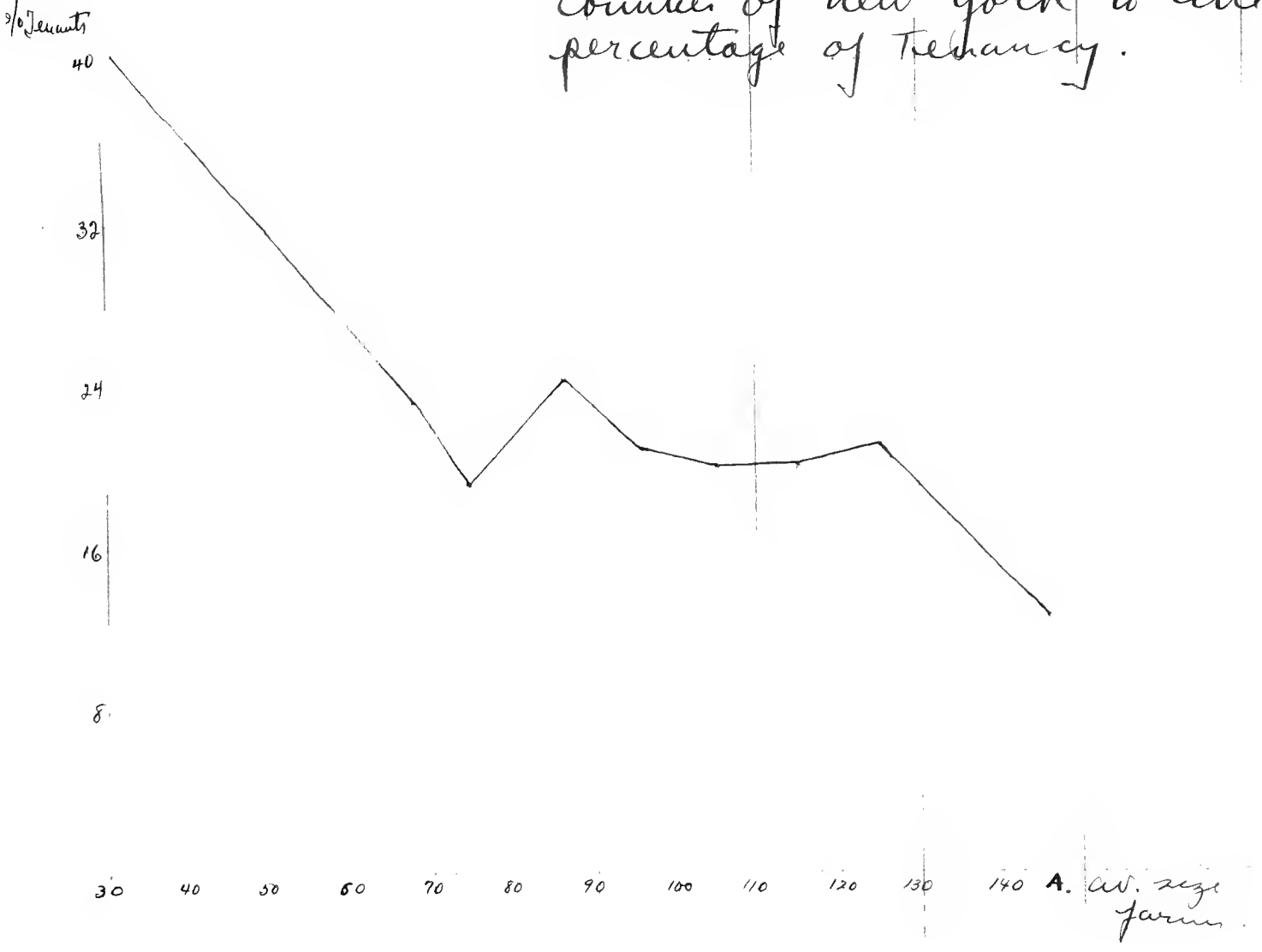
Table VII. Relation of Size of Farms in the Counties of New York to the Percentage of Tenants.

Size	Number of counties	Average size	Per cent tenants
Under 60 acres	6	31.7	40.2%
60 - 70	3	67.6	23.5
70 - 80	5	74.6	19.1
80 - 90	6	86.3	24.5
90 - 100	9	96.1	21.
100 - 110	8	105.3	20.1
110 - 120	11	114.6	20.2
120 - 130	9	125.4	21.1
130 and over	4	146.6	12.6
	61 counties		

Chart IV shows this relationship in the form of a curve. The groups under 60 acres include the counties about New York. Hence the curve takes a very decided drop, but the same relation finally shows up with the other counties.

Chart IV

Relation of size of farms in the counties of New York to the percentage of Tenancy.



Counties Used in Different Groups to Show Relation Between Size of Farms and Per Cent of Tenancy.

Under 60 Acres	
Kings	13.1
Nassau	54.8
New York	23.1
Queens	20.3
Richmond	32.6
Rockland	46.0

60 - 70 Acres	
Erie	69.9
Monroe	64.5
Wayne	68.3

70 - 80 Acres	
Niagara	70.4
Onondaga	75.8
Oswego	77.9
Suffolk	71.5
Westchester	77.6

80 - 90 Acres	
Cayuga	85.9
Chautauqua	81.7
Genesee	89.
Ontario	87.9
Orleans	83.8
Yates	89.3

90 - 100 Acres	
Albany	92.1
Madison	94.4
Oneida	99.6
Orange	97.6
Rensselaer	100.
Schuyler	99.
Seneca	91.7
Tompkins	91.4
Ulster	98.9

100 - 110 Acres	
Broome	102.4
Chemung	103.4
Fulton	106.5
Montgomery	106.9
Saratoga	108.6
Schenectady	103.5
Tioga	104.9
Wyoming	105.8

110 - 120 Acres

Allegany	118.6
Cattaraugus	111.3
Cortland	114.8
Franklin	116.9
Greene	116.5
Livingston	118.1
Otsego	110.8
Putnam	112.7
Schoharie	112.9
Steuben	111.1
Sullivan	117.2

120 - 130 Acres

Chenango	126.6
Clinton	124.8
Columbia	126.4
Dutchess	128.9
Jefferson	126.8
St. Lawrence	129.1
Washington	125.3
Hamilton	120.2
Herkimer	120.3

130 and over

Delaware	152.3
Essex	157.9
Lewis	142.1
Warren	134.2

The Relation of Tenancy to the Production of Milk per Cow.

In Table VIII the relation of the amount of milk per cow to the percentage of tenancy in a county is shown. Chart V shows the relationship in the form of a curve. The poorer the cows the less the percentage of tenancy and the better the cows the greater the percentage of tenancy. Of course, this does not take into consideration production on the butter fat basis, which would be a better way. It should be fairly typical, however, because with 2 or 3 exceptions single breeds are not localized in a certain section but distributed throughout the state.

Table VIII. Showing Relation of Percentage of Tenancy to Amount of Production.

Group	Range of tenancy	Average per cent	Average production	Number in each group
I	8% to 15.9%	12.97%	483.5 gal.	14
II	16% to 19.9%	18.13%	509.4	13
III	20% to 24.9%	22.43%	534.1	20
IV	25% to 74.1%	35.72%	575.5	14

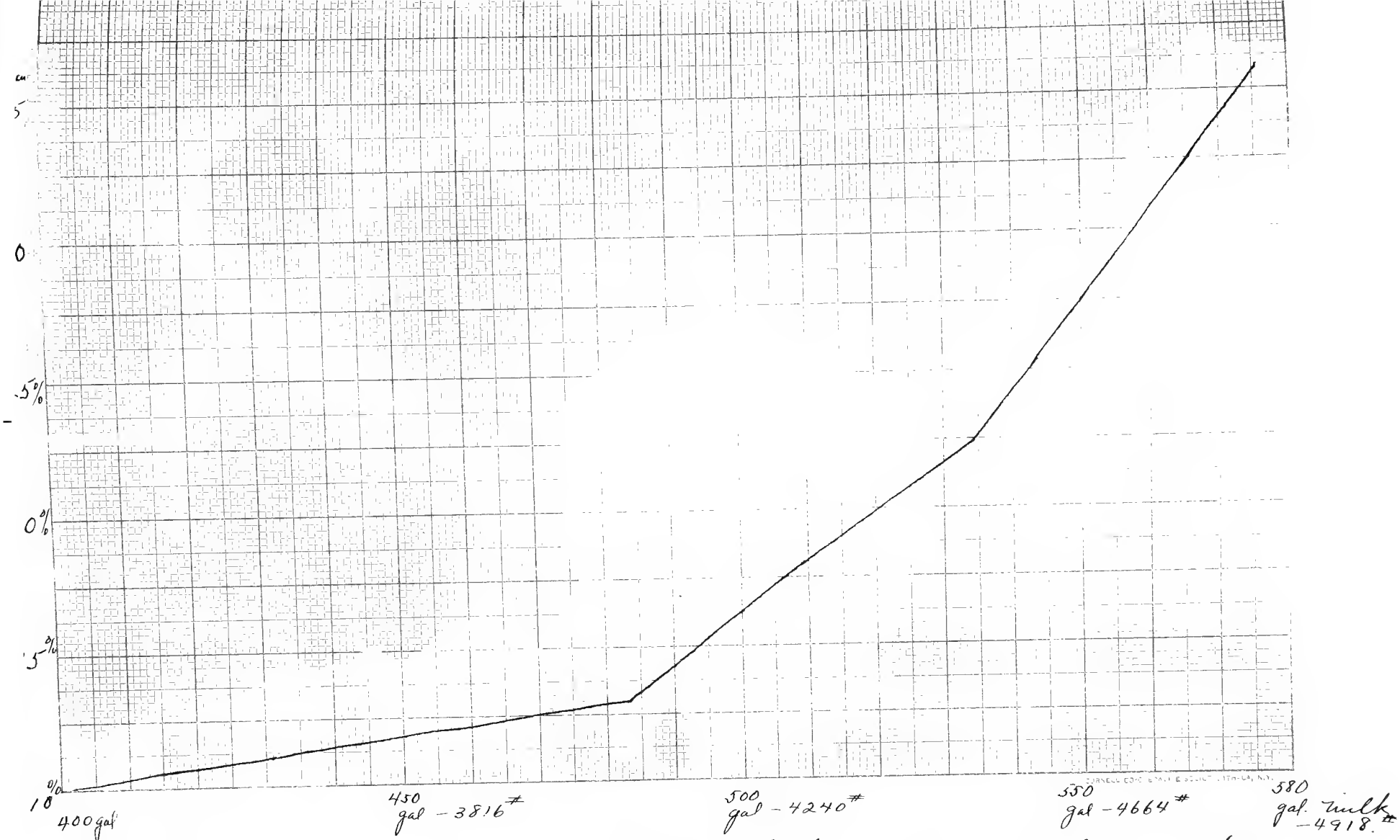


Chart V Curve showing the relation of percentage of tenancy to production per cow

Counties Used in Different Groups to Show Relation Between Production per Cow and Peroentage of Tenancy in the Counties of New York.

County	Per cent tenancy	Production
Chautauqua	15.1%	471. gal.
Delaware	13.8	526.6
Essex	11.4	467.6
Franklin	15.6	439.7
Fulton	13.3	460.5
Hamilton	11.3	441.6
Lewis	15.5	507.9
Oswego	13.7	492.6
Rockland	9.4	502.5
Suffolk	14.4	465.7
Sullivan	8.0	402.9
Tioga	15.9	583.8
Ulster	14.5	463.9
Warren	9.8	443.8
Total	181.7	6770.1
Average	12.97%	483.5 gal.

Group II.

County	Per cent tenancy	Production
Broome	16.4%	541.8 gal.
Cattaraugus	18.3	493.7
Chenango	19.8	589.8
Clinton	16.0	409.4
Columbia	18.2	481.7
Dutchess	18.9	603.6
Greene	16.2	491.6
Oneida	19.2	540.6
Rensselaer	17.6	505.1
Saratoga	18.4	444.3
Schuyler	19.7	542.3
Washington	18.4	479.5
Wyoming	18.7	499.7
Total	235.8	6623.1
Average	18.13%	509.4 gal.

Group III.

County	Per cent tenancy	Production
Allegany	22.4%	496.2 gal.
Cortland	20.9	574.4
Madison	21.6	606.7
Onondaga	21.3	579.5
Orange	21.5	673.3
Otsego	21.1	529.6
Schenectady	21.1	499.3
Schoharie	22.9	526.3
Steuben	21.5	437.3
Tompkins	21.4	536.7
Wayne	21.0	481.1
Westchester	20.4	604.9
Yates	22.4	480.6
Chemung	24.2	502.5
Genesee	24.6	501.1
Ontario	24.9	482.6
Erie	23.8	551.6
St. Lawrence	24.7	473.8
Albany	23.3	541.
Putnam	23.7	603.2
Total	448.7	10681.7
Average	22.43%	534.1 gal.

Group IV.

County	Per cent tenancy	Production
Cayuga	25.8	516.1 gal.
Monroe	25.6	506.0
Niagara	25.8	466.6
Jefferson	34.5	507.0
Kings	38.2	507.9
Livingston	31.1	514.1
Montgomery	32.8	575.9
Orleans	34.4	450.6
Richmond	36.2	788.0
Seneca	30.0	485.0
New York	74.1	683.3
Queens	53.5	958.9
Herkimer	28.3	537.7
Nassau	29.8	560.1
Total	500.1	8057.2
Average	35.72%	575.5 gal.

The Relation of Per Cent of Improved Land to Per cent of Tenancy in a County.

Table IX shows the relation of per cent of improved land to the per cent of tenancy in the counties of New York arranged by groups. Chart VI shows this in the form of a curve, the greater the percentage of improved land in a county, the greater the percentage of tenancy.

Table IX. The Relation of Per Cent of Improved Land to Per Cent of Tenancy in a County.

	Number of counties	Average per cent improved land per farm	Per cent tenancy
Below 50%	8	43.3%	12.5%
50 - 60%	6	53.7	17.3
60 - 65%	6	62.6	17.8
65 - 70	9	67.5	22.2
70 - 75	8	72.6	28.2
75 - 80	10	77.5	22.9
80 - 85	9	82.4	27.5
85 and over	5	88.6	30.9
	61 counties		

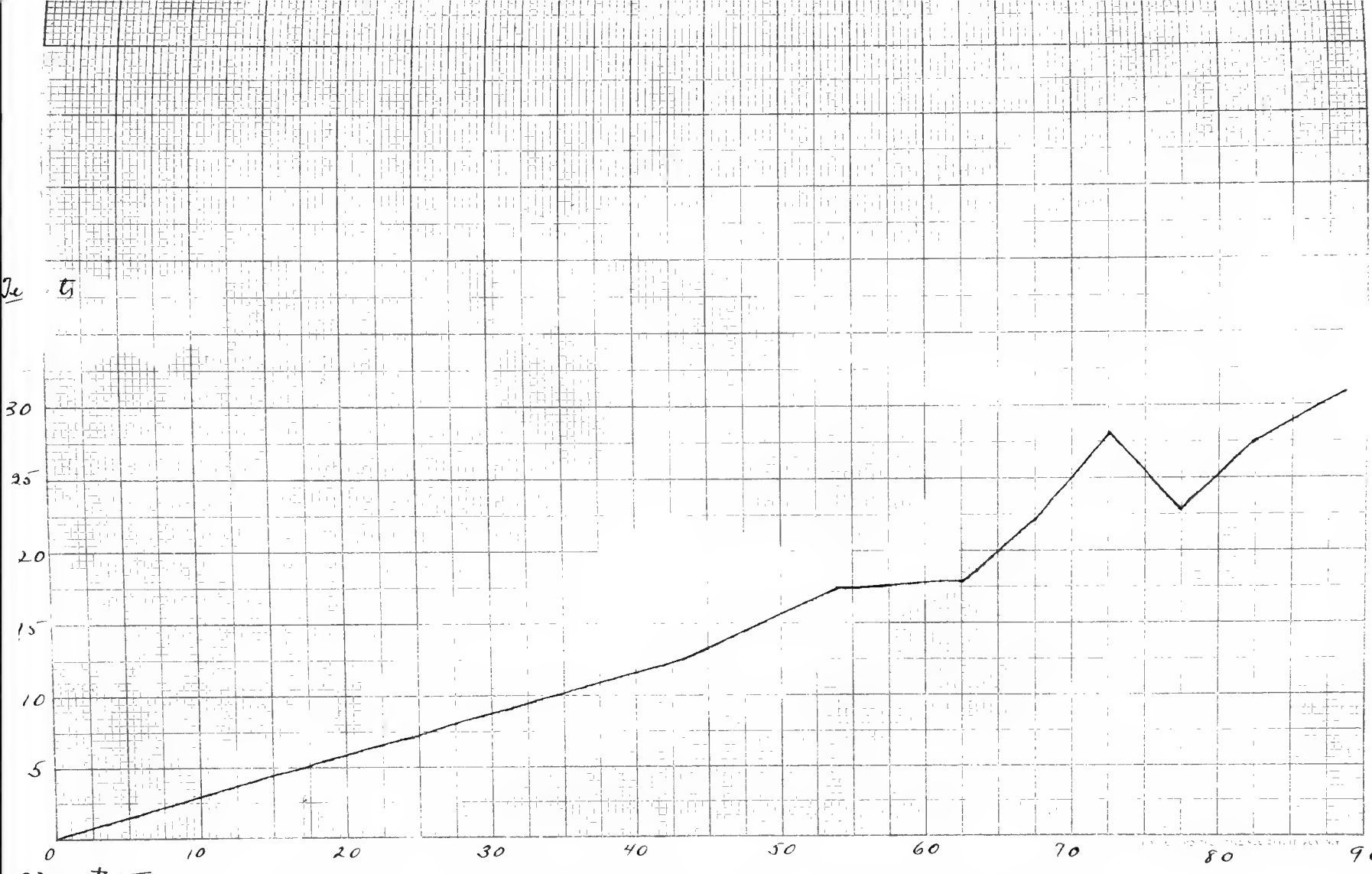


Chart VI The relation of percentage of improved land per farm and the percentage of tenancy in different co. ties of new York, sorted by groups.

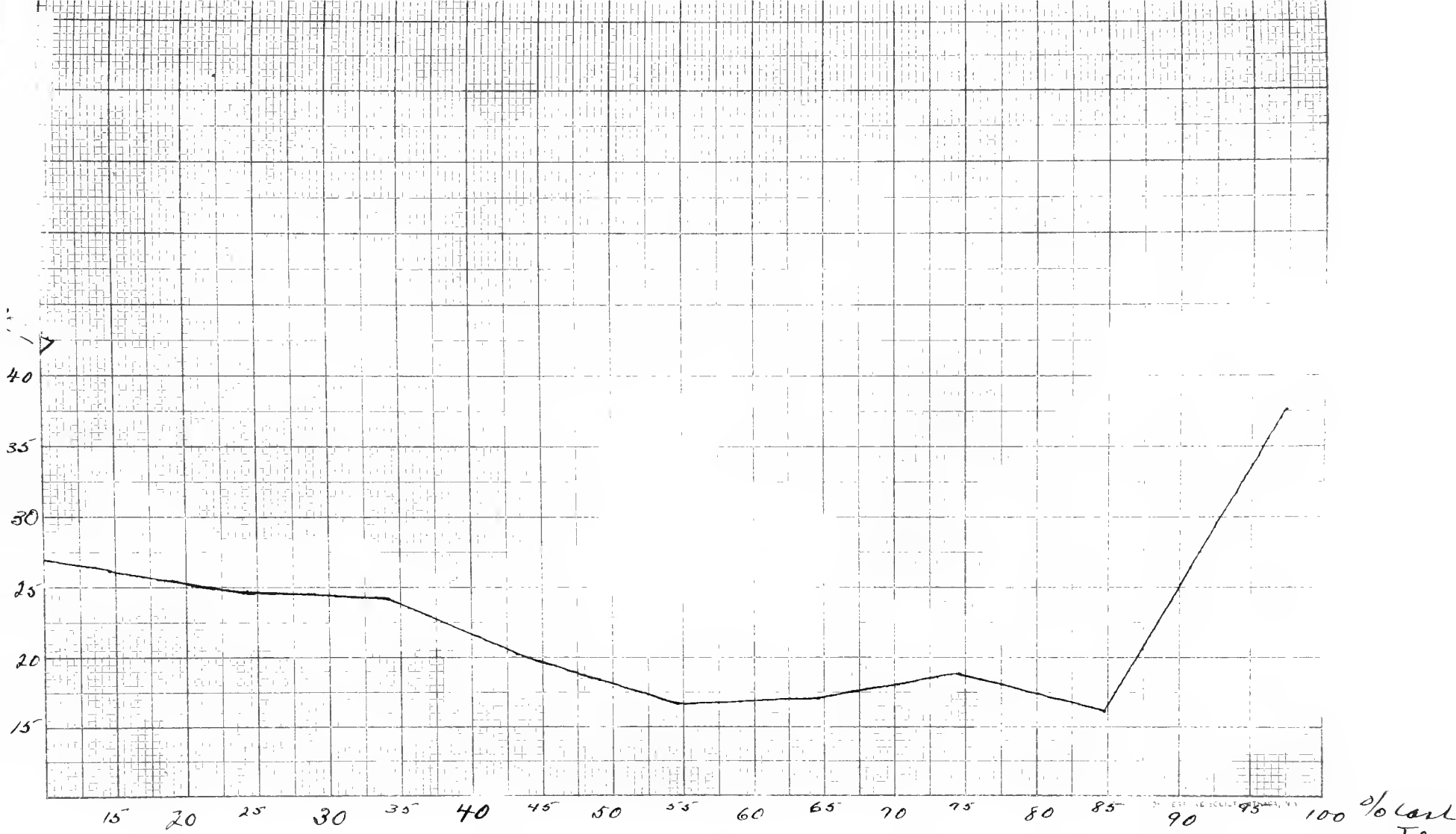


Chart VII Curve showing the relation of percentage of Cash Tenants to the percentage of tenancy in different Counties of New York, arranged by groups.

The Relation of Cash Tenants to Total Tenants

Table X shows that the greater the per cent of total tenancy the greater the per cent of cash tenants except in the last group which contains the counties about New York. Here, as in other cases, conditions are abnormal.

This relation is shown in the form of a curve by Chart VII.

Table X. Relation of Cash Tenants to Total Tenants.

Per cent total tenants cash tenants	Average per cent total tenants cash tenants	Number of counties	Per cent tenancy
Below 20%	14.6%	5	26.2%
20 - 30	24.1	6	24.7
30 - 40	34.3	8	24.2
40 - 50	43.1	11	20.2
50 - 60	54.6	9	16.6
60 - 70	64.7	4	17.0
70 - 80	74.5	5	18.9
80 - 90	84.8	6	16.1
90 and over	97.4	7	37.6

This paper shows some of the relations of tenancy to various conditions in New York. Tenants are on the most productive and most valuable land in greater numbers than they are on the poorer land. The best cows are in counties with most

tenants, hence the best cows are on the best land. The most tenants are also found on farms with the greatest percentage of improved land, which shows that they will not farm rough and uncleared land. This fact is shown further in that the most tenants are in the counties having the smaller farms which may indicate that the tenant rather have less and have it good than to have a large area and only fair to poor. The greater the per cent of tenancy in a county the greater the per cent of cash tenants. All these relationships may indicate that the tenant is a good business man and is working on good business principles, i.e., farming in a section where he can obtain the most for time and money expended.

	Per cent tenants	Farm land value per acre	Number farms for rent or sale	Number tenants
State	20.8%			
Albany	23.5	$49.61	37	733
Allegany	22.4	37.32	17	1106
Broome	16.4	31.00	24	660
Cattaraugus	18.3	54.94	21	1103
Cayuga=	25.8	50.40	14	1235
Chautauqua	15.1	58.38	41	1135
Chemung	24.2	33.56	13	530
Chenango	19.8	27.63	63	841
Clinton	16.0	31.30	4	576
Columbia	18.2	46.60	75	538
Cortland	20.9	31.73	18	546
Delaware	13.8	26.65	41	694
Dutchess	18.9	58.50	26	681
Erie	23.8	94.90	13	1943
Essex	11.4	24.70	5	260
Franklin	15.6	32.40	17	572
Fulton	13.3	25.20	18	257
Genesee	24.6	70.69	12	801
Greene	16.2	37.90	10	430
Hamilton	15.3	24.00	0	53
Herkimer	28.3	39.30	16	875
Jefferson	34.5	43.10	17	1994
Kings	38.2	310.00	--	42
Lewis	15.5	25.3	17	518
Livingston	31.1	60.00	1	1027
Madison	21.6	39.35	51	872
Monroe	25.6	133.92	13	1527
Montgomery	32.8	50.50	5	719
Nassau	29.8	741.00	--	303
New York	74.1	2234. ~~(buildings)~~	--	63
Niagara	25.8	111.00	--	1120
Oneida	19.2	42.80	48	1327
Onondaga	21.3	67.60	19	1227
Ontario	24.9	68.90	11	1100
Orange	21.5	75.30	33	847
Orleans	34.4	95.90	16	957
Oswego	13.7	35.90	23	864
Otsego	21.1	32.30	49	1128
Putnam	23.7	69.10	--	231
Queens	53.5	1952.00	--	385
Rensselaer	17.6	38.60	45	642
Richmond	36.2	654.00	--	59
Rockland	9.4	195.00	1	106
St. Lawrence	24.7	36.30	17	2035
Saratoga	18.4	52.00	22	663
Schenectady	21.1	55.40	2	219
Schoharie	22.9	29.10	88	753
Schuyler	19.7	38.8	15	378
Seneca	30.6	61.90	6	638
Steuben	21.5	36.10	24	1582

	Per cent tenants	Farm land value per acre	Number farms for rent or sale	Number tenants
Suffolk	14.4%	$172.50	17	358
Sullivan	8.0	36.00	8	308
Tioga	15.9	27.80	23	452
Tompkins	21.4	42.80	15	640
Ulster	14.5	49.60	35	727
Warren	9.8	21.50	12	182
Washington	18.4	31.10	19	656
Wayne	21.0	79.50	4	1099
Westchester	20.4	428.10	11	383
Wyoming	18.7	48.80	11	661
Yates	22.4	63.00	4	513